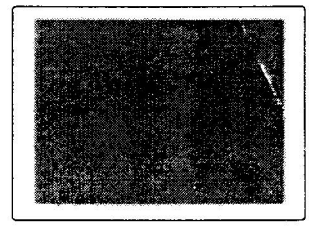
17" AUTO SCAN Colour Monitor

4CM4770/00T/05T/06T/75T

Service
Service
Service



ServiceManual

Horizontal frequencies
30 tot 58 kHz

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PCS 43 164 GB

Technical Data

General

Mains voltage	: 195 - 264V
Mains frequency	: 47 - 63 Hz
Power consumption	: 85 W (nominal) 120 W (max)
Operating temperature	: 0°C to 40°C
Weight	: 18.8 kg
Width x Depth x Height	: 422 x 440 x 425 mm

Picture tube

Size	: 17 inch
Light transmission	: 53.5 % (dark glass)
Deflection angle	: 90 Degree
EHT voltage	: 25 kVolt
Pitch	: 0.31 mm

Video

Dot rate	: 75 MHz
Video signal	: 0.7 Vpp/75Ω

Sync. signal

Vertical frequency	: 50 - 100 Hz
Horizontal frequency	: 30 to 58 kHz
- separated H/V sync.	: TTL-level
- composite H/V sync.	: TTL-level
- composite sync.	: on Green
- sync. polarity	: positive or negative

Audio

- Input signal	: 150 mV_{rms}/22kΩ
- Output	: 1 W

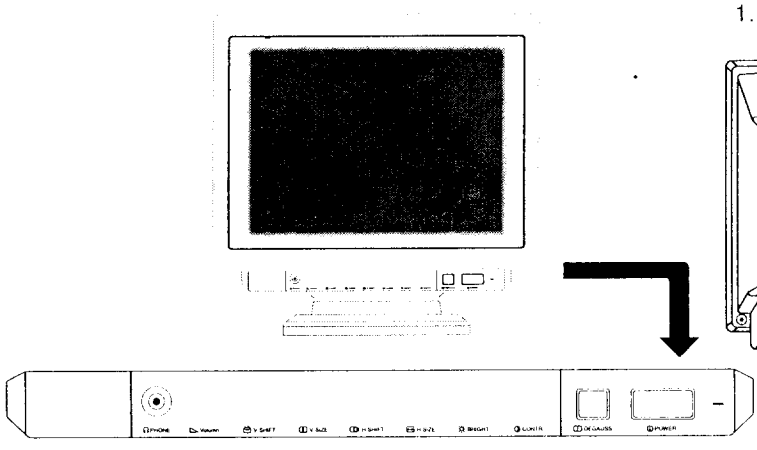
* Specifications are subject to change without notice !

RESOLUTION MODES AND SYNC. POLARITIES

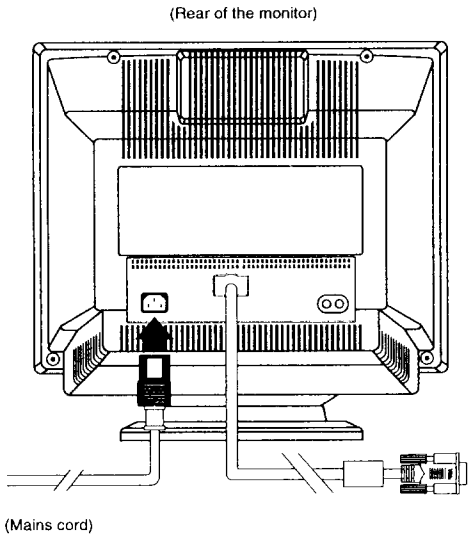
Modes	Horizontal frequencies	Vertical frequencies	H. sync. polarity	V. sync. polarity	Resolution Dot * lines
VGA	31,5 kHz	70 Hz	Positive (+)	Negative (-)	640 * 350
VGA	31,5 kHz	70 Hz	Negative (-)	Positive (+)	640 * 400
VGA	31,5 kHz	60 Hz	Negative (-)	Negative (-)	640 * 480
S-VGA	37.8 kHz	72 Hz	Positive (+)	Positive (+)	640 * 480
MAC-II	35.0 kHz	67 Hz	Compositie Sync on green (-)	Compositie Sync on green (-)	640 * 480
S-VGA	35.2 kHz	56 Hz	Negative (-) Positive (+)	Negative (-) Positive (+)	800 * 600
S-VGA	37.8 kHz	60 Hz	Positive (+)	Positive (+)	800 * 600
S-VGA	48.1 kHz	72 Hz	Positive (+)	Positive (+)	800 * 600
APPLE	49.8 kHz	75 Hz	Negative (-) Positive (+)	Negative (-) Positive (+)	832 * 624
8514A	35.5 kHz	87 Hz	Positive (+)	Positive (+)	1024 * 768 Interlaced
	48.4 kHz	60 Hz	Negative (-)	Negative (-)	1024 * 768
	56.5 kHz	70 Hz	Negative (-) Positive (+)	Negative (-) Positive (+)	1024 * 768

Controls and Connection Facilities

Controls

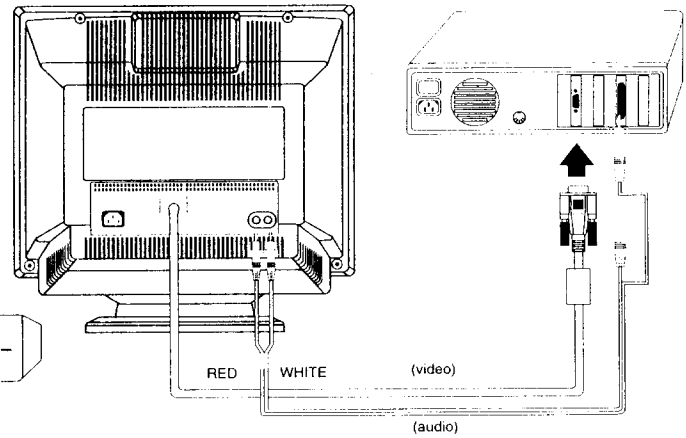


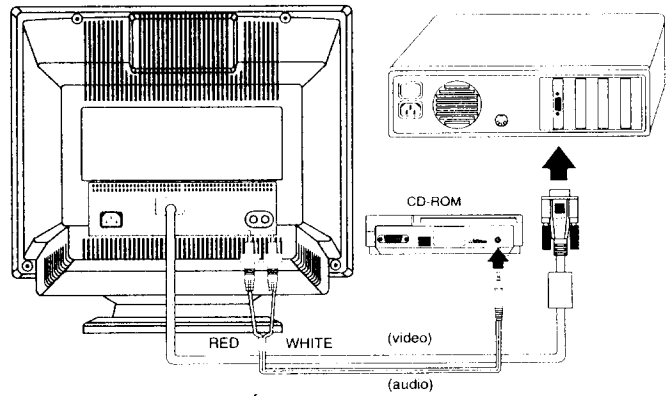
Connection to the mains



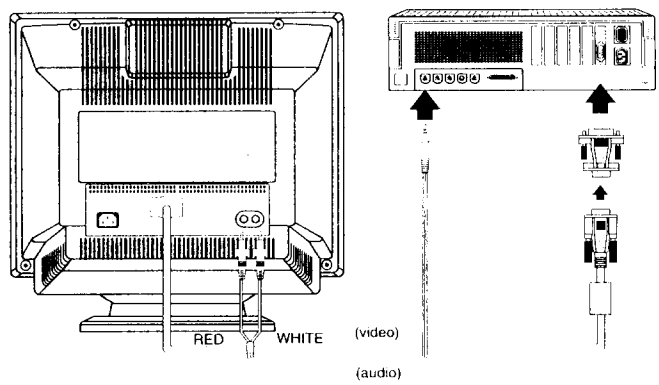
Connection to the computer

1. IBM PC, PC/XT, PC/AT, PS/2 or the compatibles:

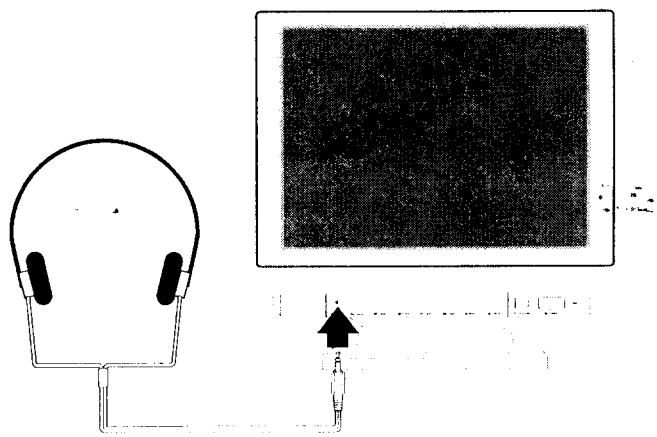




2. Apple Macintosh series:

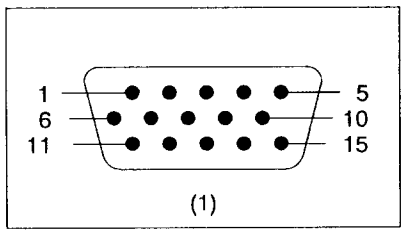


3. Earphone connection:

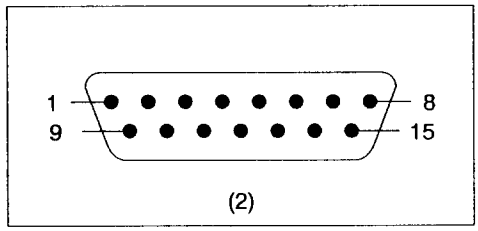


Connection facilities

Pin assignment 15p "D" shell (3 rows)



Pin assignment 15p "D" shell (2 rows)



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INPUT- OUTPUT SIGNALS

15 pins D-Shell connector **D-Shell adapter (3 rows to 2)**

Pin	Assignment	Sensitivity	Terminal impedance	Assignment	Sensitivity	Terminal impedance
1	Red Video input	RGB-analog	75Ω	Red ground		
2	Green Video input/ sync. on green	RGB-analog	75Ω	Red Video input/	RGB-analog	75Ω
3	Blue Video input	RGB-analog	75Ω	Composite sync.		2.2 Ωk
4	Ident output (connected to 10)			Sync. ground		
5	Self test input (ground)			Green Video input	RGB-analog	75Ω
6	Red Video ground			Green ground		
7	Green Video ground			Sense		
8	Blue Video ground			Not connected		
9	Not connected (no pin)			Blue Video input	RGB-analog	75Ω
10	Logic ground			Sense 2		
11	Ident output (connected to 10)			Comp-sync + V-sync ground		
12	Not connected			V-sync		
13	Horizontal sync. (or Hor. + Vert. sync)	TTL Level L=0-0.8V H=2.4 -5V	2.2 Ωk pull down	Blue Video ground		2.2kΩ pull down
14	Vertical sync.	TTL Level L=0-0.8V H=2.4 -5V	2.2 Ωk pull down	H-sync ground		2.2kΩ pull down
15	Not connected (no pin)			H-sync		

Warnings and Notes

Warnings

1. Safety regulations require that the unit should be returned in its original conditions and that components identical to the original components are used. The safety components are indicated by the symbol ⚠.

2. In order to prevent damage to **ICs** and transistors, all high-voltage flash-overs must be avoided. In order to prevent damage to the picture tube, the method shown in Fig. 3.1 should be used to discharge the picture tube. Use a high-voltage probe and a multimeter (position DC-V). Discharge until the meter reading is **0 V** (after approx. 30s).

3. **ESD**
   All ICs and many other semiconductors are sensitive to electrostatic discharges (ESD). Careless handling during repair can drastically shorten the life. Make sure that during repair you are connected by a pulse band with resistance to the same potential as the earth of the unit. Keep components and tools also at this same potential.

4. When repairing a unit, always connect it to the mains voltage via an isolating transformer.

5. Be careful when taking measurements in the high-voltage section and on the picture tube panel.

6. It is recommended that safety goggles are worn when replacing the picture tube.

7. When making settings, use plastic rather than metal tools.
   This will prevent any short-circuit and the danger of a circuit becomes unstable.

8. Never replace modules or other components while the unit is switched on.

9. Together with the deflection unit the picture tube is used as an integrated unit. Adjustment of this unit during repair is therefor not recommended.

10. After repair the wiring should be fastened once more in the cable clamps for this purpose.

Notes

1. The direct voltages and oscillograms are average voltages. They have been measured by using the Service testsoftware and under the following conditions:
   - Mode: 1024 * 768 (56.5kHz/70Hz)
   - Signal pattern: grey scale
   - Adjust brightness and contrast control for the mechanical mid-position (click position)

2. The picture tube panel has printed spark gaps. Each spark gap is connected between an electrode of the picture tube and the Aquadag coating.

3. The semiconductors indicated in the circuit diagram(s) and in the parts lists are completely interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.

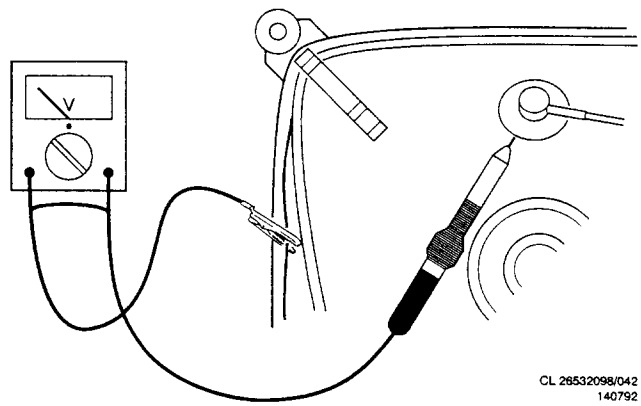


Fig. 3.1

Mechanical instructions

Location of the Panels (see Fig. 4.1)

1. Deflection + Supply panel (1102)
2. Video panel (1103)
3. Ear phone panel (1108)
4. Control panel (1110)

General

To be able to perform measurements and repairs on the "circuit boards", these unit should placed in the service position first:

Video panel

- Remove the rear cover (4 screws), see Fig. 4.2.
- Remove the metal shielding by desolder 8 lags.

Main panel and control panel

- Remove the rear cover (4 screws).
- Turn the set 90 degrees counter-clockwise.
- Remove the pedestal with the metal shielding (4 screws).
- Fig. 4.3 shows the service position.

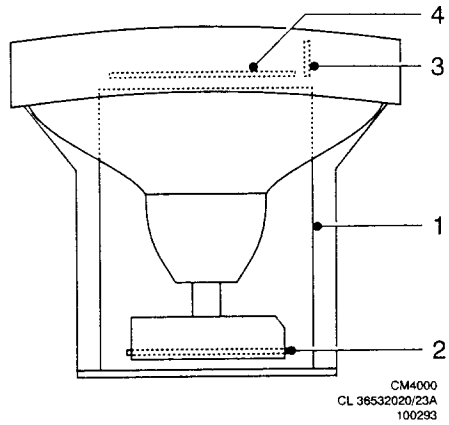


Fig. 4.1

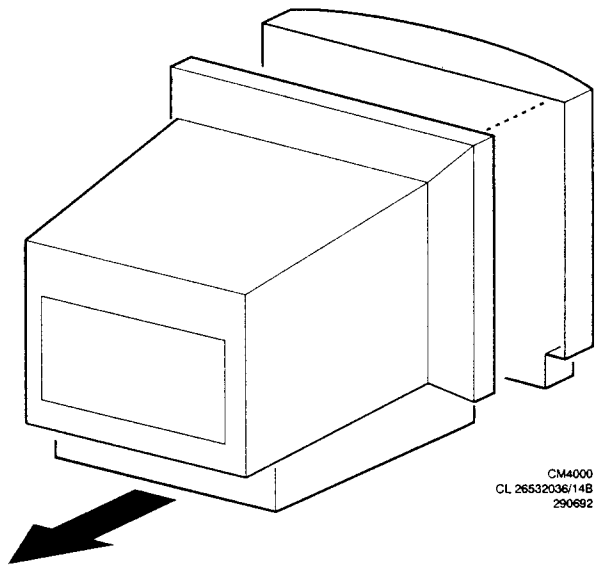


Fig. 4.2

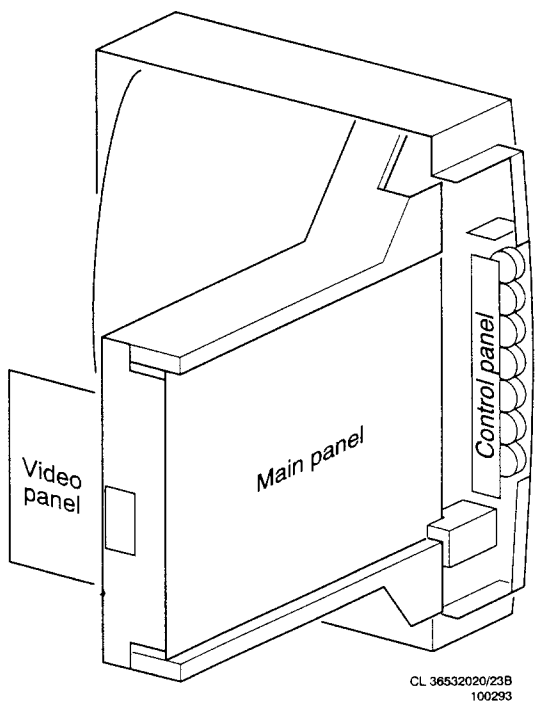
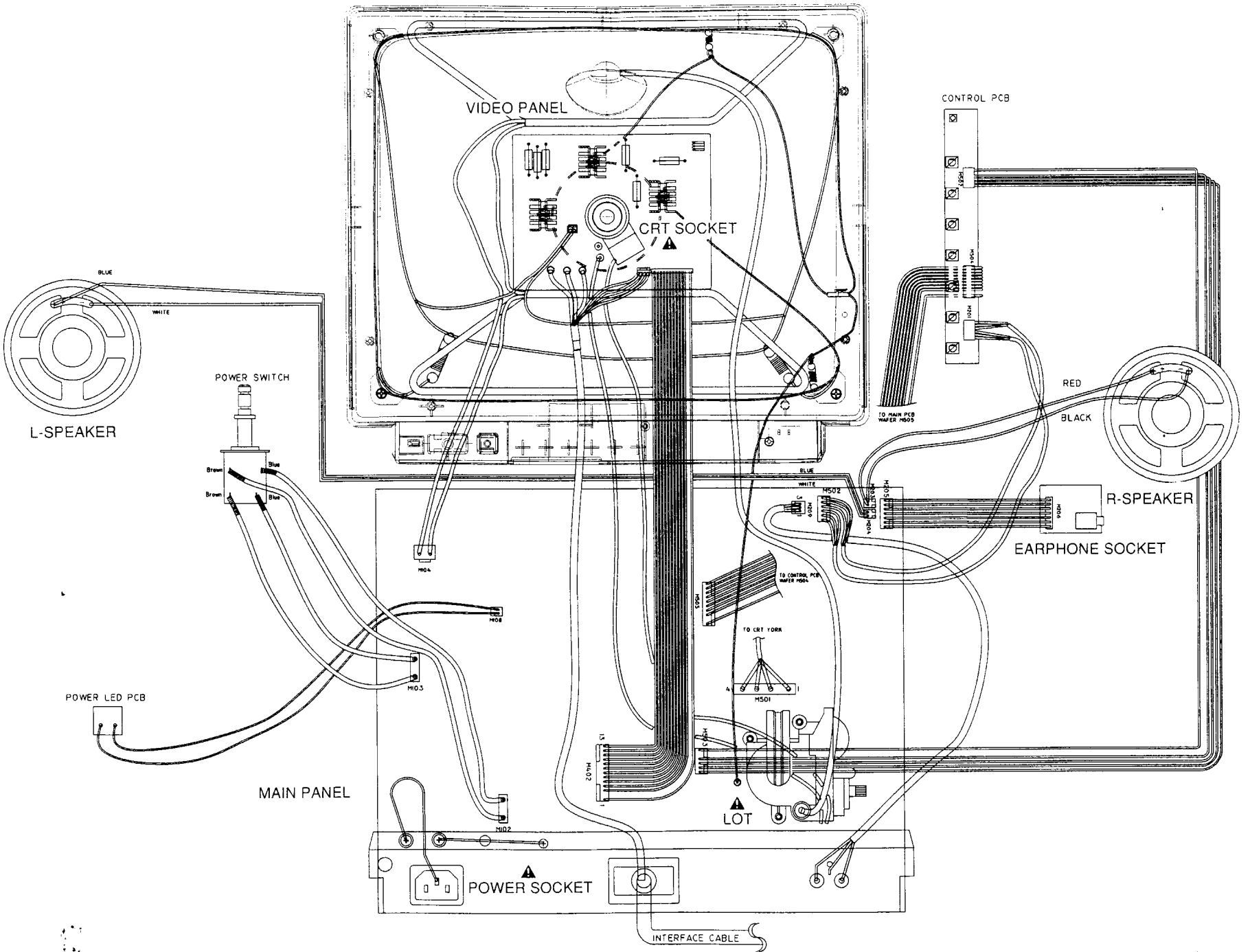


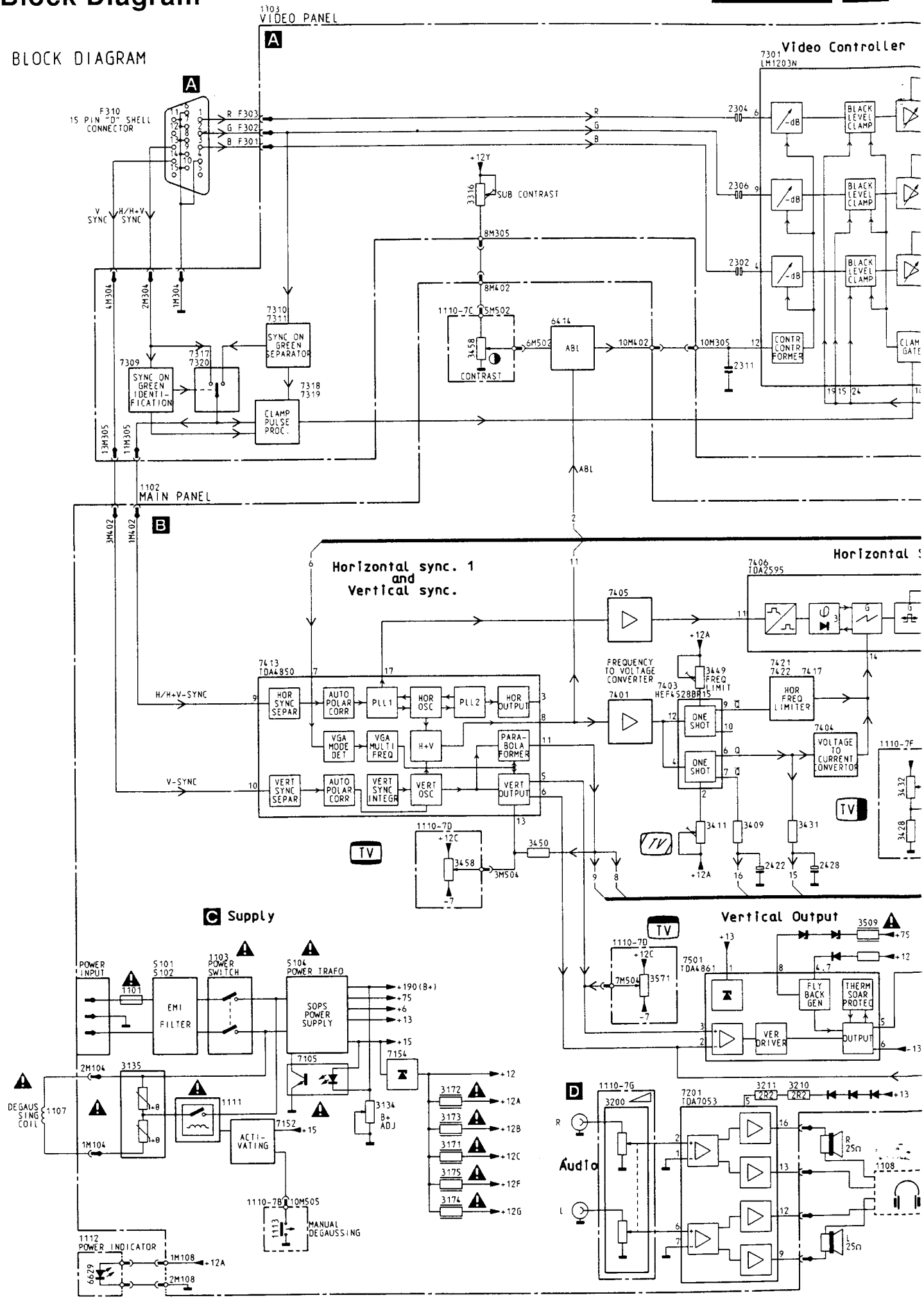
Fig. 4.3

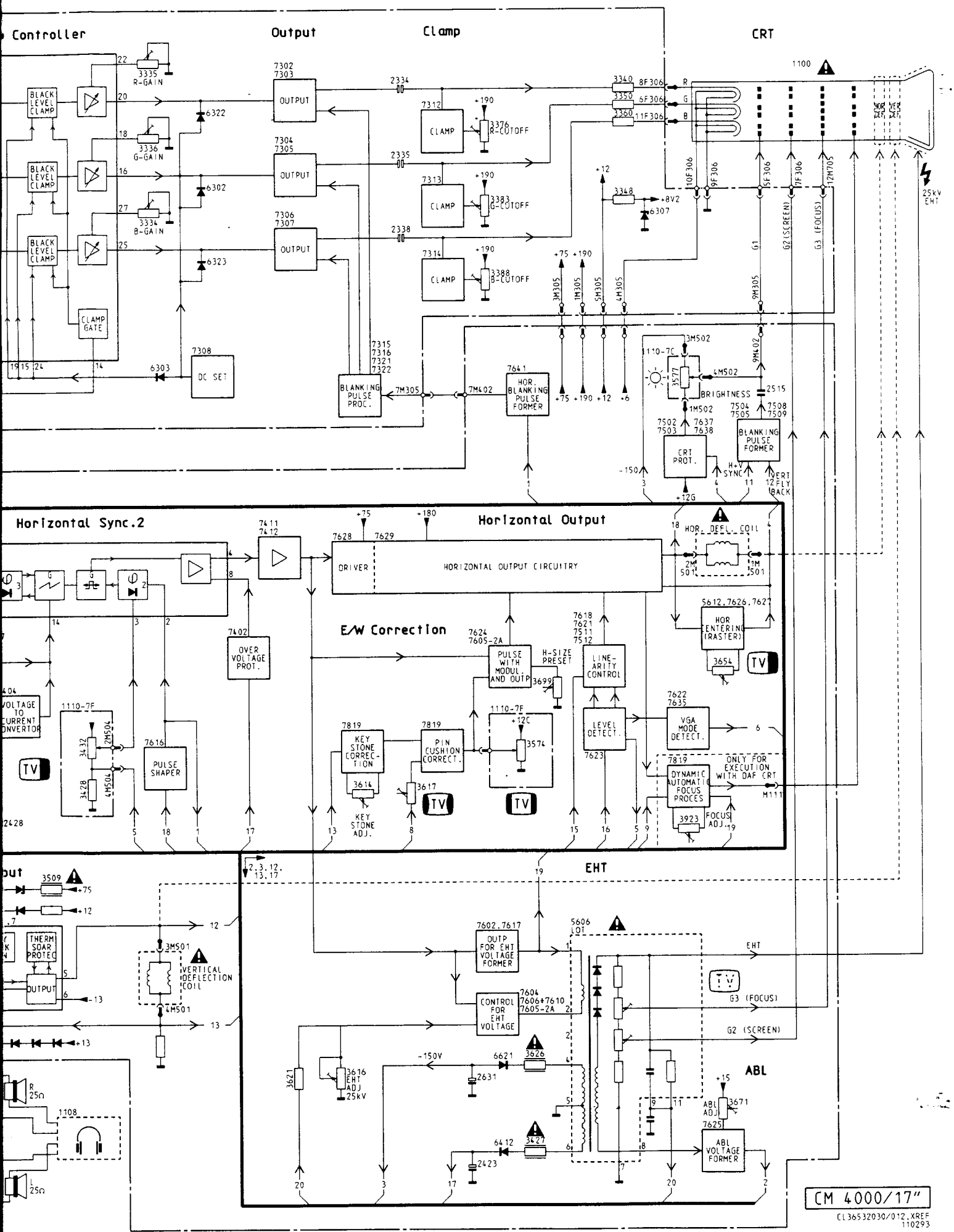
Wiring diagram

4CM4770/..T 5.1 5.2 4CM4770/..T



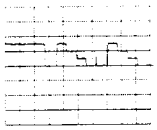
Block Diagram




Controller
Output
Clamp
CRT
Horizontal Sync.2
Horizontal Output
E/W Correction
EHT
ABL
BLACK LEVEL CLAMP
CLAMP GATE
DC SET
BLANKING PULSE PROC.
HOR. BLANKING PULSE FORMER
BRIGHTNESS
CRT PROT.
BLANKING PULSE FORMER
DRIVER
HORIZONTAL OUTPUT CIRCUITRY
HOR. DEFL. COIL
HOR CENTERING (RASTER)
OVER VOLTAGE PROT.
PULSE WITH MODUL. AND OUTP
H-SIZE PRESET
LINE-ARITY CONTROL
LEVEL DETECT.
VGA MODE DETECT.
DYNAMIC AUTOMATIC FOCUS PROCES
ONLY FOR EXECUTION WITH DAF CRT
KEY STONE CORREC-TION
KEY STONE ADJ.
PIN CUSHION CORRECT.
PULSE SHAPER
VOLTAGE TO CURRENT CONVERTOR
OUTP FOR EHT VOLTAGE FORMER
CONTROL FOR EHT VOLTAGE
EHT ADJ 25kV
ABL ADJ
ABL VOLTAGE FORMER
VERTICAL DEFLECTION COIL
THERM SOAR PROTEC
OUTPUT
G3 (FOCUS)
G2 (SCREEN)
25kV EHT
CM 4000/17"
CL36532030/012.XREF
110293

PCS 43 170 GB

Wave forms for diagram A / diagram B

A1 7301-6

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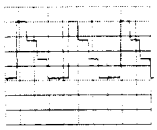
A2 7301-20

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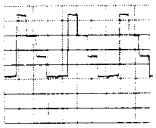
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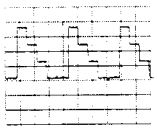
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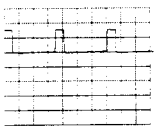
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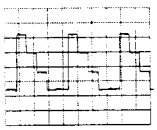
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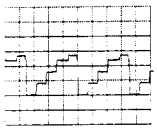
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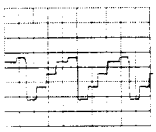
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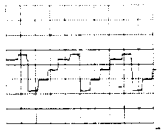
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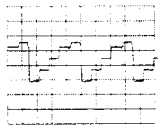
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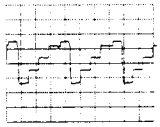
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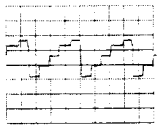
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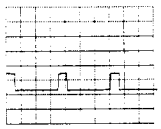
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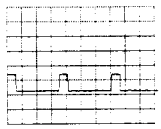
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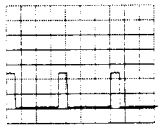
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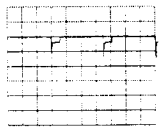
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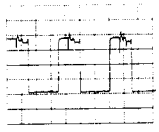
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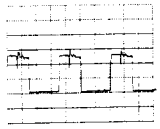
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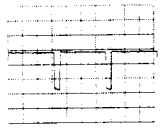
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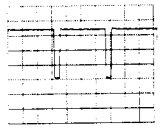
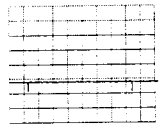
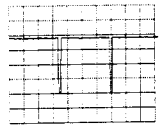
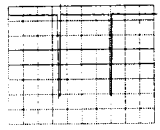
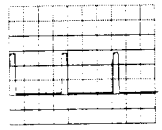
Δv=2.5v AC

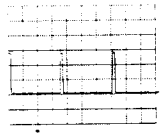
A20 7317-b

T=17.7us
Δv=3.36v AC

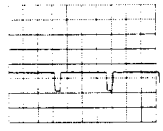
A21 M304-4

T=14.2ms
Δv=3.4v AC

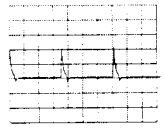
A22 7301-14

T=17.7us
Δv=3.84v AC

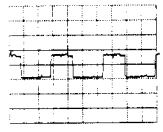
A23 7318-8

T=17.7us
Δv=5.72v AC

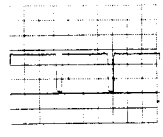
A24 7318-11

T=17.7us
Δv=5.4v AC

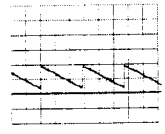
A25 7318-3,6

T=17.7us
Δv=5.5v AC

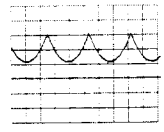
A26 7318-1

T=17.7us
Δv=2.5v AC

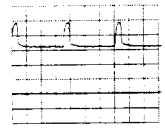
A27 7318-4

T=17.7us
Δv=4.76v AC

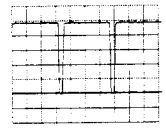
A28 7319-b

T=17.7us
Δv=0.3v AC

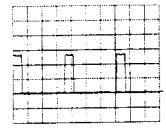
B1 7413-9

T=17.7us
Δv=2.5v AC

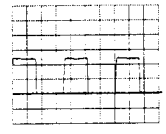
B2 7413-5,6

T=14.2ms
Δv=0.74v AC

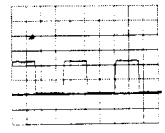
B3 7413-11

T=14.2ms
Δv=1.92v AC

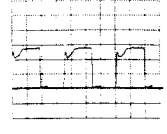
B4 7413-17

T=17.7us
Δv=1.68v AC

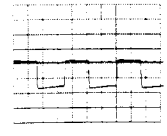
B5 7405-c

T=17.7us
Δv=4.8v AC

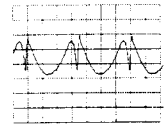
B6 7406-2

T=17.7us
Δv=5.3v AC

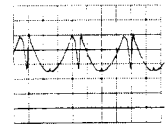
B7 7406-4

T=17.7us
Δv=11.8v AC

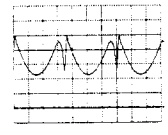
B8 7407-e

T=17.7us
Δv=10.6v AC

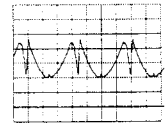
B9 7628-c

T=17.7us
Δv=138v AC

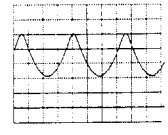
B10 7628-b

T=17.7us
Δv=9.2v AC

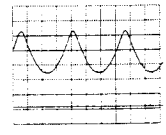
B11 7626-b

T=17.7us
Δv=52v AC

B12 7626-c

T=17.7us
Δv=51.2v AC

B13 7626-e

T=17.7us
Δv=55.2v AC

B14 7627-c

T=17.7us
Δv=52.8v AC

B15 7618-g

T=17.7us
Δv=58.4v AC

B16 7621-g

T=17.7us
Δv=57.6v AC

2301	D5
2302	E5
2303	C4
2304	E5
2306	F4
2308	E5
2311	F4
2312	F4
2313	F4
2314	E4
2315	E4
2316	E4
2317	F4
2318	F4
2321	E4
2323	E4
2324	F3
2325	E2
2326	G2
2327	B3
2328	E1
2331	G2
2332	B2
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2336	F2
2337	B2
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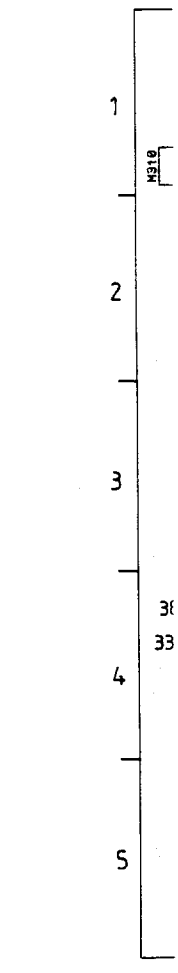
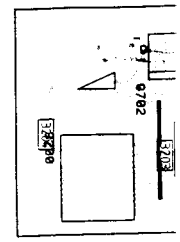
2339	B4
2341	A3





Video panel / Control panel

2301 D5	2342 E3	3305 E4	3336 G4	3367 F1	3713 F4	6308 D5	7316 B4
2302 E5	2343 D4	3306 F4	3337 F3	3368 F1	3714 G4	6309 C4	7317 C4
2303 C4	2344 A4	3307 D5	3338 F3	3369 B4	3715 G4	6310 F5	7318 G5
2304 E5	2345 E2	3308 C5	3339 B5	3370 C3	3717 F5	6311 D2	7320 C4
2306 F4	2346 G3	3309 C4	3340 D2	3371 B2	3718 G5	6312 D2	7321 F1
2308 E5	2347 B3	3310 C4	3341 E4	3372 C2	3719 G5	6313 E2	7322 E1
2311 F4	2353 B5	3311 E5	3342 F4	3373 D2	3720 F4	6314 E2	9301 E4
2312 F4	2354 E3	3312 E5	3343 F4	3374 C1	3801 B4	6315 B2	9302 D2
2313 F4	2355 D2	3313 E5	3344 F4	3375 C1	3802 D5	6316 B2	9303 G3
2314 E4	2356 A5	3314 A1	3345 B4	3376 C1	3803 C5	6317 A4	9304 D1
2315 E4	2357 A5	3315 A1	3346 B4	3377 C1	3804 B4	6318 A4	9306 B4
2316 E4	2358 B5	3316 A1	3347 A4	3378 E2	3805 D5	6319 G4	9308 C4
2317 F4	2360 B5	3317 C3	3348 A4	3379 G2	3806 B3	6320 F5	9309 F5
2318 F4	2361 B5	3318 E5	3349 B4	3380 E1	3807 E4	6321 E3	9311 D5
2321 E4	2362 B2	3319 C3	3350 E3	3381 B1	3808 A4	6322 F3	9319 B2
2323 E4	2363 E2	3320 C5	3351 F3	3382 B1	3809 A3	6323 E3	9320 F1
2324 F3	2364 C2	3321 C5	3352 F3	3383 C1	3810 B4	7301 F4	9321 A2
2325 E2	2365 G1	3322 C4	3353 D5	3384 C1	3811 G5	7302 E2	F301 D5
2326 G2	2366 C1	3323 C4	3354 E2	3385 C2	3823 F1	7303 E1	F302 E5
2327 B3	2367 C1	3324 E1	3355 G2	3386 B2	3824 F5	7304 G3	F303 E5
2328 E1	2368 B1	3325 D1	3356 B3	3387 B1	5301 D1	7305 F2	F306 D3
2331 G2	2371 E2	3326 F3	3357 A3	3388 B1	5302 F2	7306 B3	M304 C5
2332 B2	2372 E3	3327 F3	3358 F1	3389 E2	5303 B3	7307 B3	M305 B5
2333 F2	2373 C2	3328 G4	3359 B4	3390 G2	5304 B3	7308 F3	M307 E3
2334 D2	2376 F5	3329 C4	3360 C2	3391 B1	5305 E1	7309 C4	M308 D4
2335 E3	2377 G5	3330 C4	3361 E2	3392 B3	5306 G1	7310 C4	M309 D4
2336 F2	2378 F5	3331 E3	3362 G2	3393 E1	5307 A2	7311 C4	M310 A1
2337 B2	3301 E5	3332 F4	3363 B3	3394 B4	5310 B4	7312 C1	
2338 C2	3302 E5	3333 F4	3364 E1	3397 E3	6302 G3	7313 B1	
2339 B4	3303 E5	3334 G3	3365 E1	3399 D4	6303 F3	7314 B1	
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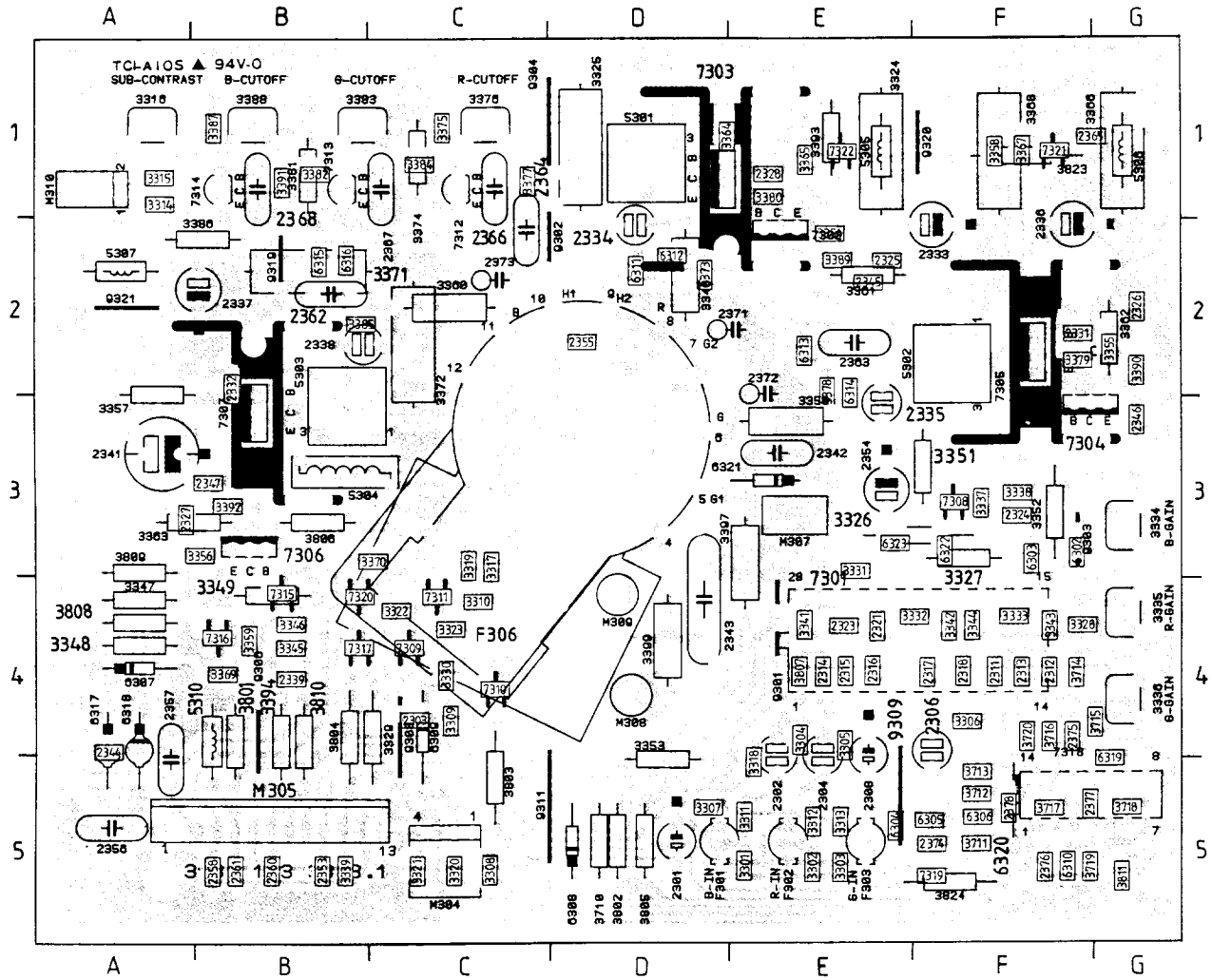
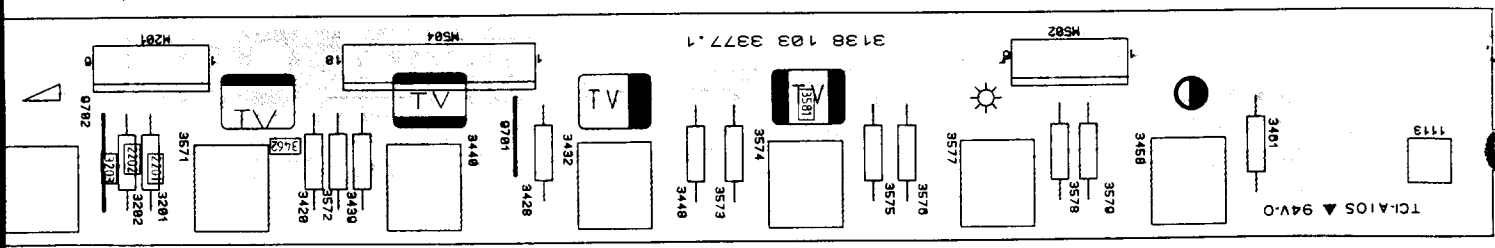
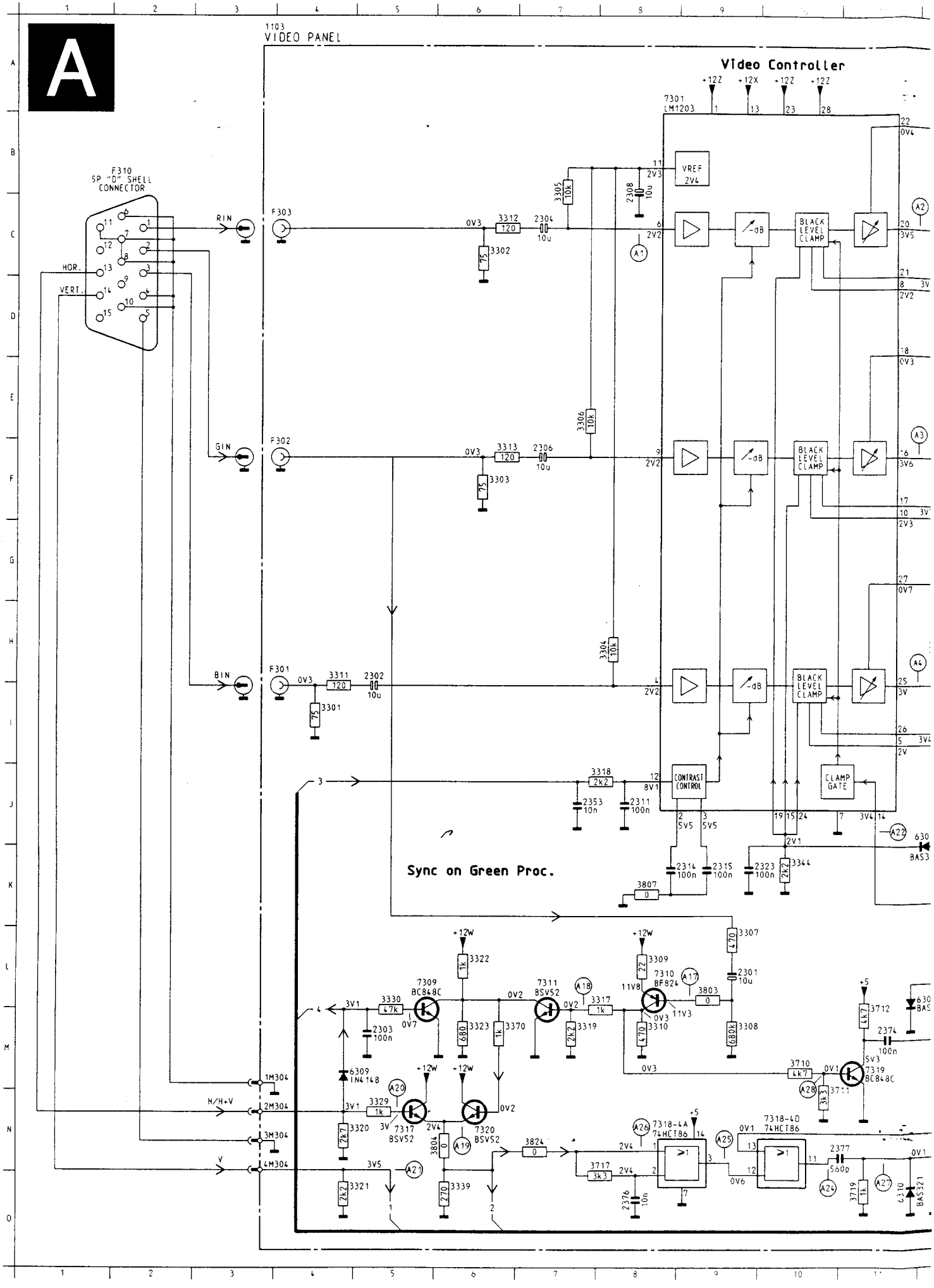
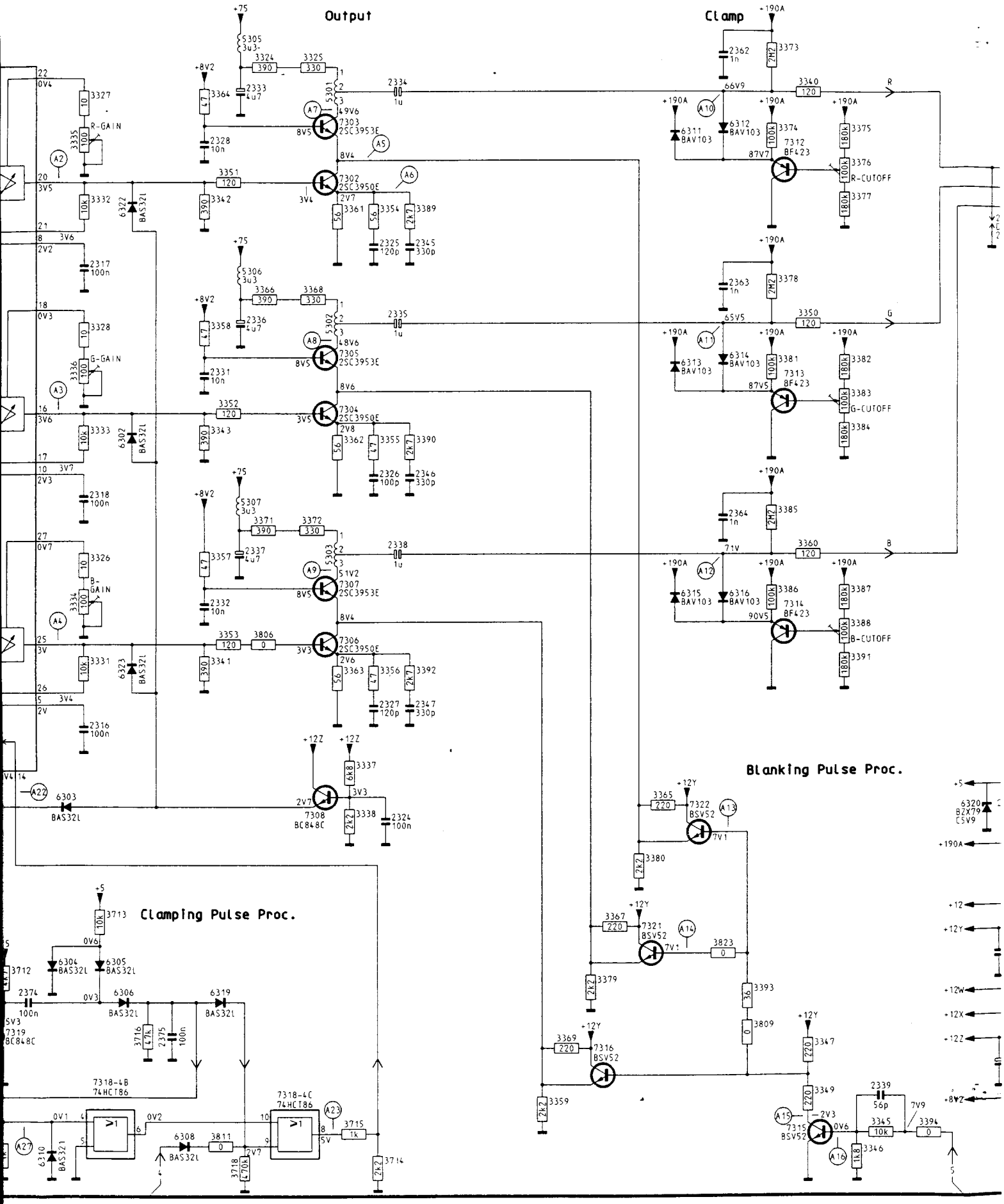
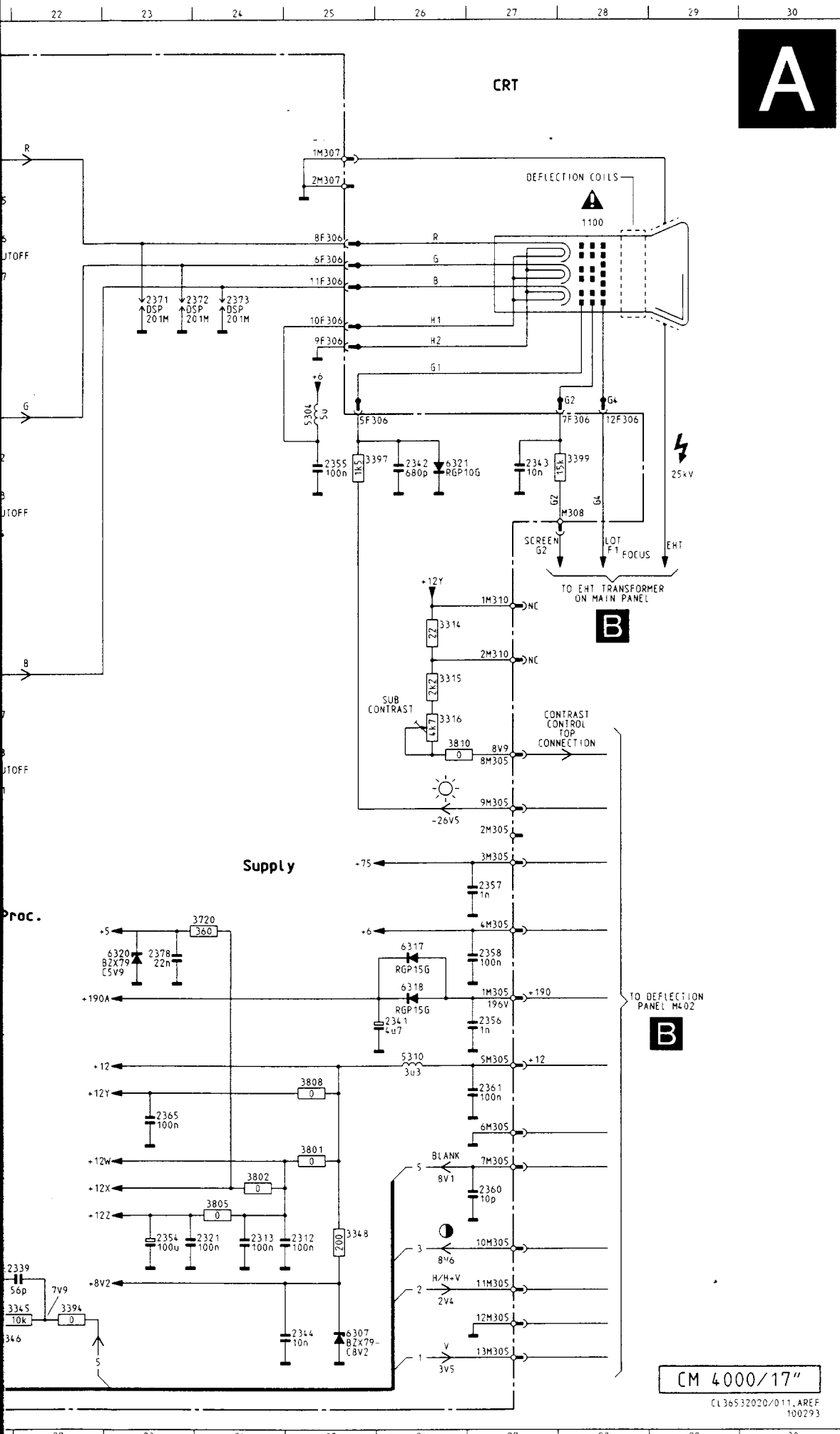





A
1103
VIDEO PANEL
Video Controller
7301
LM1203
+12Z
+12X
+12Z
+12Z
1
13
23
28
F310
5P "D" SHELL
CONNECTOR
HOR.
VERT.
RIN
GIN
BIN
F303
F302
F301
VREF
2V4
-dB
BLACK
LEVEL
CLAMP
CONTRAST
CONTROL
CLAMP
GATE
Sync on Green Proc.
7309
BC848C
7310
BF824
7311
BSV52
7317
BSV52
7320
BSV52
7318-4A
74HCT86
7318-4D
74HCT86
7319
BC848C
1M304
2M304
3M304
4M304
H/H+V
V
BAS3
BAS321


Output
Clamp
Blanking Pulse Proc.
Clamping Pulse Proc.
R-GAIN
G-GAIN
B-GAIN
R-CUTOFF
G-CUTOFF
B-CUTOFF
7303 2SC3953E
7305 2SC3953E
7307 2SC3953E
7302 2SC3950E
7304 2SC3950E
7306 2SC3950E
7308 BC848C
7312 BF423
7313 BF423
7314 BF423
7322 BSV52
7321 BSV52
7316 BSV52
7315 BSV52
7319 BC848C
7318-4B 74HCT86
7318-4C 74HCT86
BAS32L
BZX79 C5V9



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	2302	H 5	3361	C15		
A	2303	M 5	3362	F15		
	2304	C 7	3363	I15		
	2306	F 7	3364	B13		
	2308	B 8	3365	J19		
	2311	J 8	3366	D14		
	2312	N25	3367	L18		
	2313	N24	3368	D15		
	2314	K 8	3369	M18		
B	2315	K 9	3370	M 6		
	2316	J12	3371	G14		
	2317	D12	3372	G15		
	2318	G12	3373	A20		
	2321	N24	3374	B20		
	2323	K 9	3375	B21		
	2324	K16	3376	C21		
	2325	D15	3377	C21		
C	2326	G15	3378	D20		
	2327	I15	3379	M18		
	2328	B13	3380	K19		
	2331	E13	3381	E20		
	2332	H13	3382	E21		
	2333	B14	3383	E21		
	2334	B16	3384	F21		
D	2335	E16	3385	G20		
	2336	E14	3386	H20		
	2337	G14	3387	H21		
	2338	G16	3388	H21		
	2339	N22	3389	E16		
	2341	K26	3390	F16		
	2342	E26	3391	I21		
	2343	E27	3392	I16		
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	2345	D16	3394	N22		
	2346	G16	3397	E25		
	2347	I16	3399	E28		
	2353	J 7	3710	M10		
	2354	N23	3711	M10		
	2355	E25	3712	L11		
F	2356	K27	3713	L12		
	2357	J27	3714	O15		
	2358	K27	3715	N15		
	2360	M27	3716	M13		
	2361	L27	3717	N 8		
	2362	A20	3718	O14		
	2363	D20	3719	O11		
	2364	G20	3720	J24		
G	2365	L23	3801	M25		
	2371	C23	3802	M24		
	2372	C23	3803	L 9		
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	2374	M11	3805	M24		
	2375	M13	3806	H14		
	2376	O 8	3807	K 8		
H	2377	N11	3808	L25		
	2378	K23	3809	M20		
	3301	I 4	3810	H26		
	3302	C 6	3811	O13		
	3303	F 6	3823	L20		
	3304	H 8	3824	N 7		
	3305	B 7	5301	B15		
	3306	E 7	5302	E15		
I	3307	L 9	5303	G15		
	3308	M 9	5304	F25		
	3309	L 8	5305	A14		
	3310	M 8	5306	D14		
	3311	H 4	5307	G14		
	3312	C 6	5310	L26		
	3313	F 6	6302	F12		
	3314	G26	6303	J12		
J	3315	H26	6304	L11		
	3316	H26	6305	L12		
	3317	L 8	6307	D25		
	3318	J 8	6308	M12		
	3319	M 7	6308	O13		
	3320	N 4	6309	M 4		
	3321	O 4	6310	D11		
K	3322	L 6	6311	B19		
	3323	M 6	6312	B20		
	3324	A14	6313	E19		
	3325	A15	6314	E20		
	3326	G12	6315	H19		
	3327	B12	6316	H20		
	3328	E12	6317	J26		
	3329	N 5	6318	K26		
L	3330	L 5	6319	M13		
	3331	I12	6320	K23		
	3332	C12	6321	E26		
	3333	F12	6322	C12		
	3334	H12	6323	I12		
	3335	B12	7301	A 8		
	3336	E12	7302	C15		
M	3337	J15	7303	B15		
	3338	K15	7304	F15		
	3339	D 6	7305	E15		
	3340	B21	7306	I15		
	3341	I13	7307	H15		
	3342	C13	7308	K15		
	3343	F13	7309	L 5		
	3344	K10	7310	L 8		
N	3345	N22	7311	L 7		
	3346	O21	7312	B20		
	3347	M21	7313	E20		
	3348	M25	7314	H20		
	3349	N21	7315	N21		
	3350	E21	7316	M18		
	3351	C14	7317	N 5		
	3352	F14	7318	N 8		
O	3353	H14	7318	N10		
	3354	C15	7318	N12		
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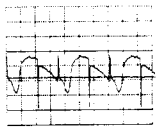
	3356	I15	7319	M11		
	3357	G13	7320	N 6		

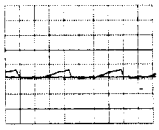
Wave forms (continued)

B17 7512-c



T=17.7us
Δv=5.04v AC

B25 7638-c



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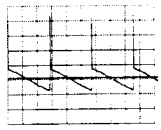
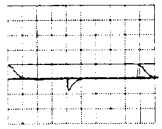
Δv=0.56v AC

B33 7501-5



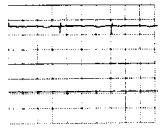
T=14.2ms
Δv=50.8v AC

B41 7615-b



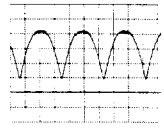
T=17.7us
Δv=1.76v AC

B49 7604-3



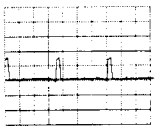
T=17.7us
Δv=1.68v AC

B57 7911-b



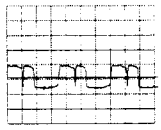
T=14.2ms
Δv=3.24v AC

B18 7401-b



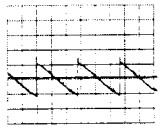
T=17.7us
Δv=0.86v AC

B26 7638-b



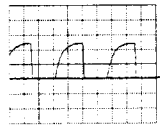
T=17.7us
Δv=1.6v AC

B34 7509-b



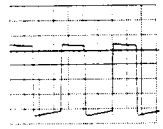
T=14.2ms
Δv=1.3v AC

B42 7409-c



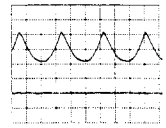
T=17.7us
Δv=12v AC

B50 7602-b



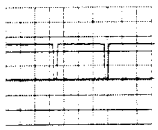
T=17.7us
Δv=9.76v AC

B58 7911-c



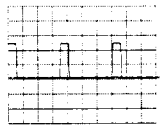
T=14.2ms
Δv=200v AC

B19 7401-c



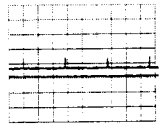
T=17.7us
Δv=12.2v AC

B27 7616-c



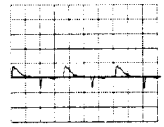
T=17.7us
Δv=11.8v AC

B35 7508-b



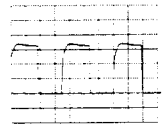
T=14.5ms
Δv=0.36v AC

B43 7410-b



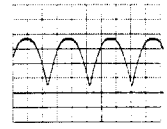
T=17.7us
Δv=1.56v AC

B51 7602-c



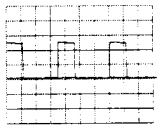
T=17.7us
Δv=68v AC

B59 7911-e



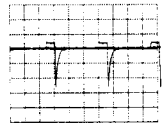
T=14.2ms
Δv=3.28v AC

B20 7403-9



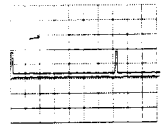
T=17.6us
Δv=12.4v AC

B28 7641-b



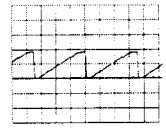
T=17.7us
Δv=6v AC

B36 7505-c



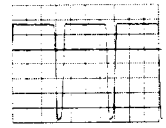
T=14.2ms
Δv=7.4v AC

B44 7410-c



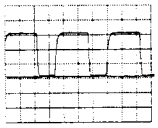
T=17.7us
Δv=9.2v AC

B52 7617-b



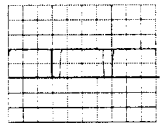
T=17.7us
Δv=656v AC

B21 7613-b



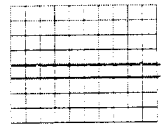
T=17.7us
Δv=14.6v AC

B29 7641-c



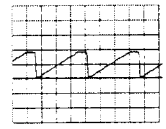
T=17.7us
Δv=10v AC

B37 7505-e



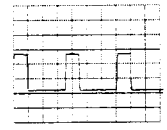
T=14.2ms
Δv=0.16v AC

B45 7605-2



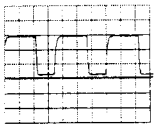
T=17.7us
Δv=8.2v AC

B53 7606-e



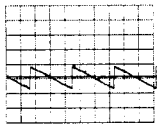
T=17.7us
Δv=12.6v AC

B22 7613-e



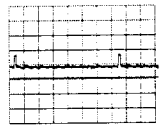
T=17.7us
Δv=13.4v AC

B30 7619-14



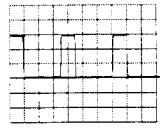
T=14.2ms
Δv=1.6v AC

B38 7504-b



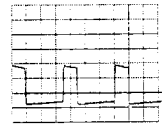
T=14.2ms
Δv=0.96v AC

B46 7605-1



T=17.7us
Δv=14.2v AC

B54 7608-g

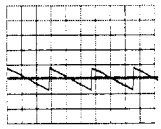


T=17.7us
Δv=13.2v AC

B23 7624-g

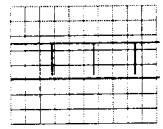
T=17.7us
Δv=13.8v AC

B31 7619-12



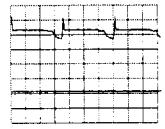
T=14.1ms
Δv=1.56v AC

B39 7504-c



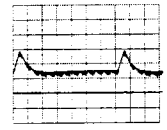
T=14.2ms
Δv=11v AC

B47 7604-1



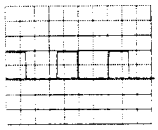
T=17.7us
Δv=2.88v AC

B55 7625-b



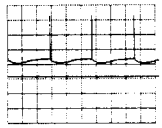
T=14.2ms
Δv=3.36v AC

B24 7624-d



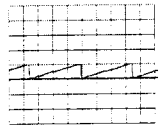
T=17.7us
Δv=180v AC

B32 7501-4



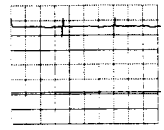
T=14.2ms
Δv=28.4v AC

B40 7605-6



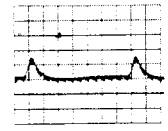
T=17.7us
Δv=4.6v AC

B48 7604-2

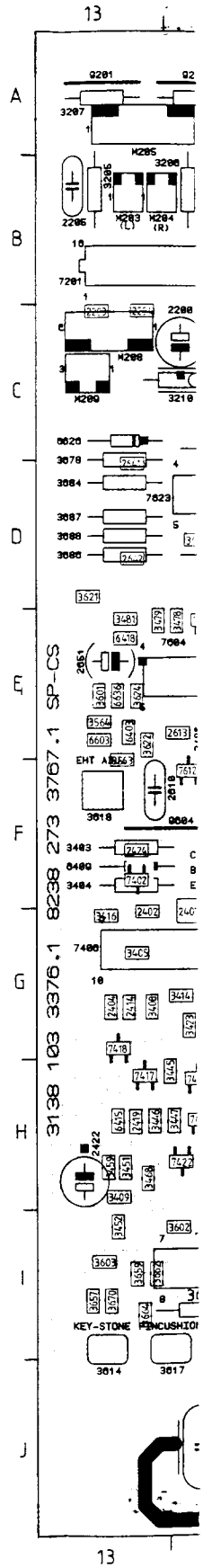


T=17.7us
Δv=2.56v AC

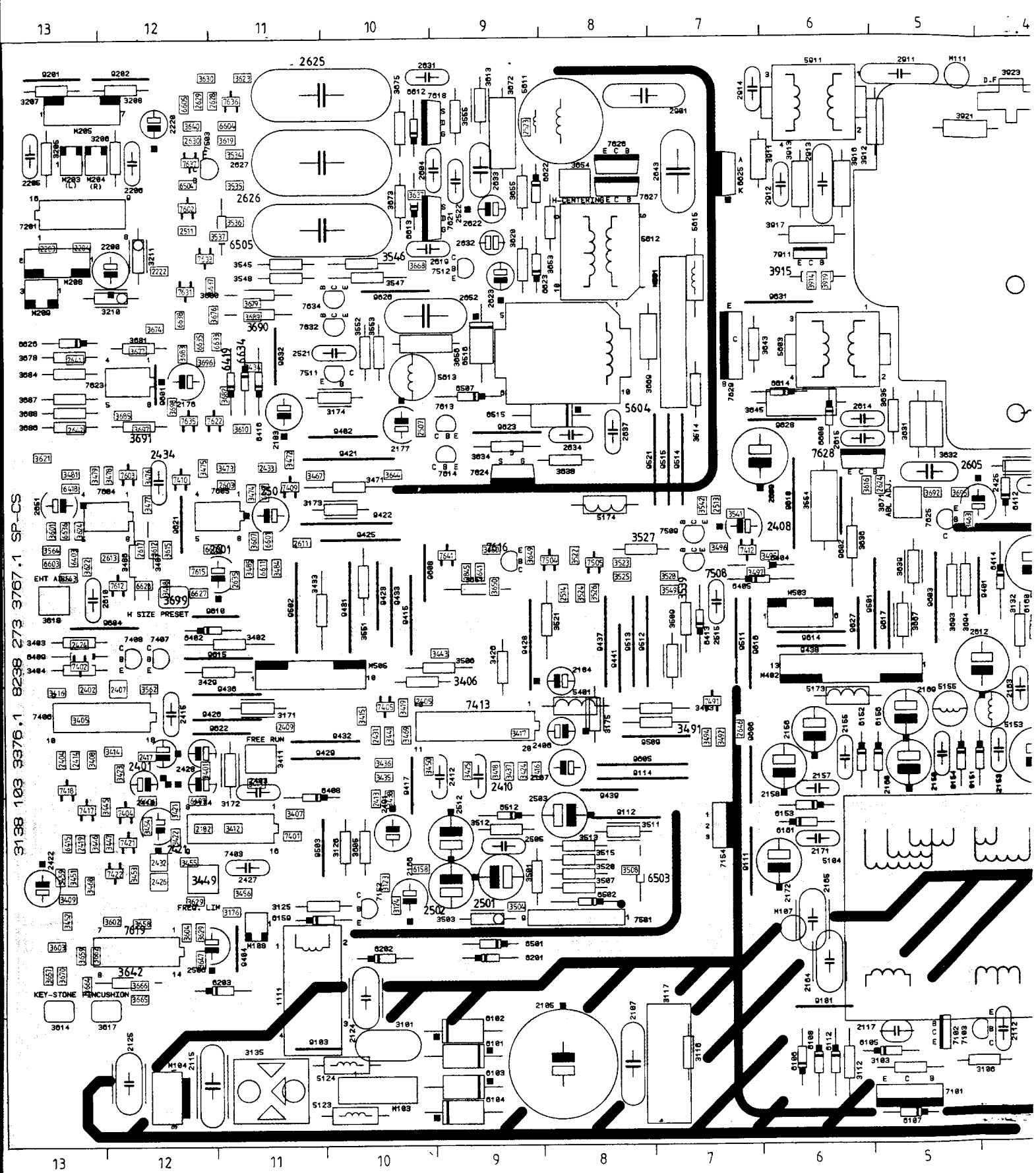
B56 7625-e

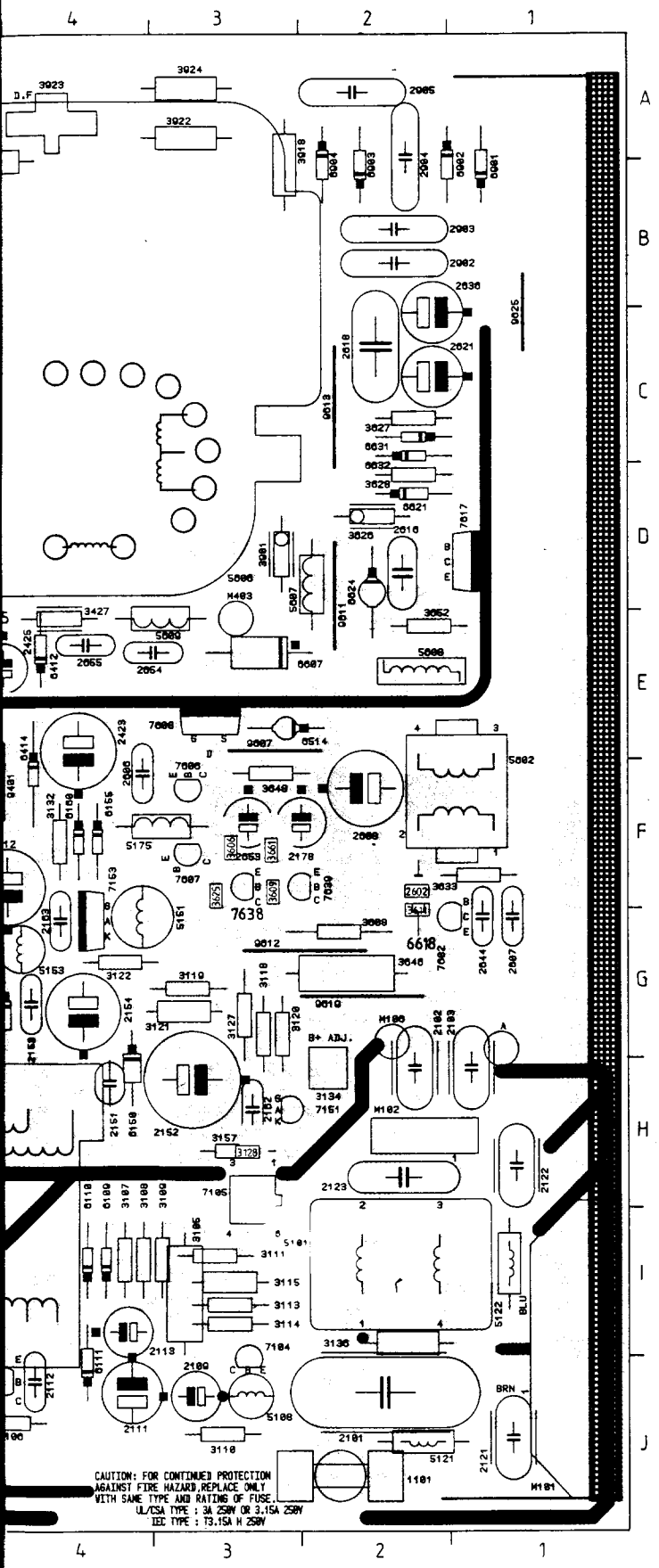


T=14.2ms
Δv=3.52v AC



Main panel


13 12 11 10 9 8 7 6 5 4
3138 103 3376.1 8238 273 3767.1 SP-CS
H-CENTERING
H SIZE PRESET
FREE RUN
FREQ. LIN
KEY-STONE
PINCUSHION
EHT ADJ.
ABL ADJ.



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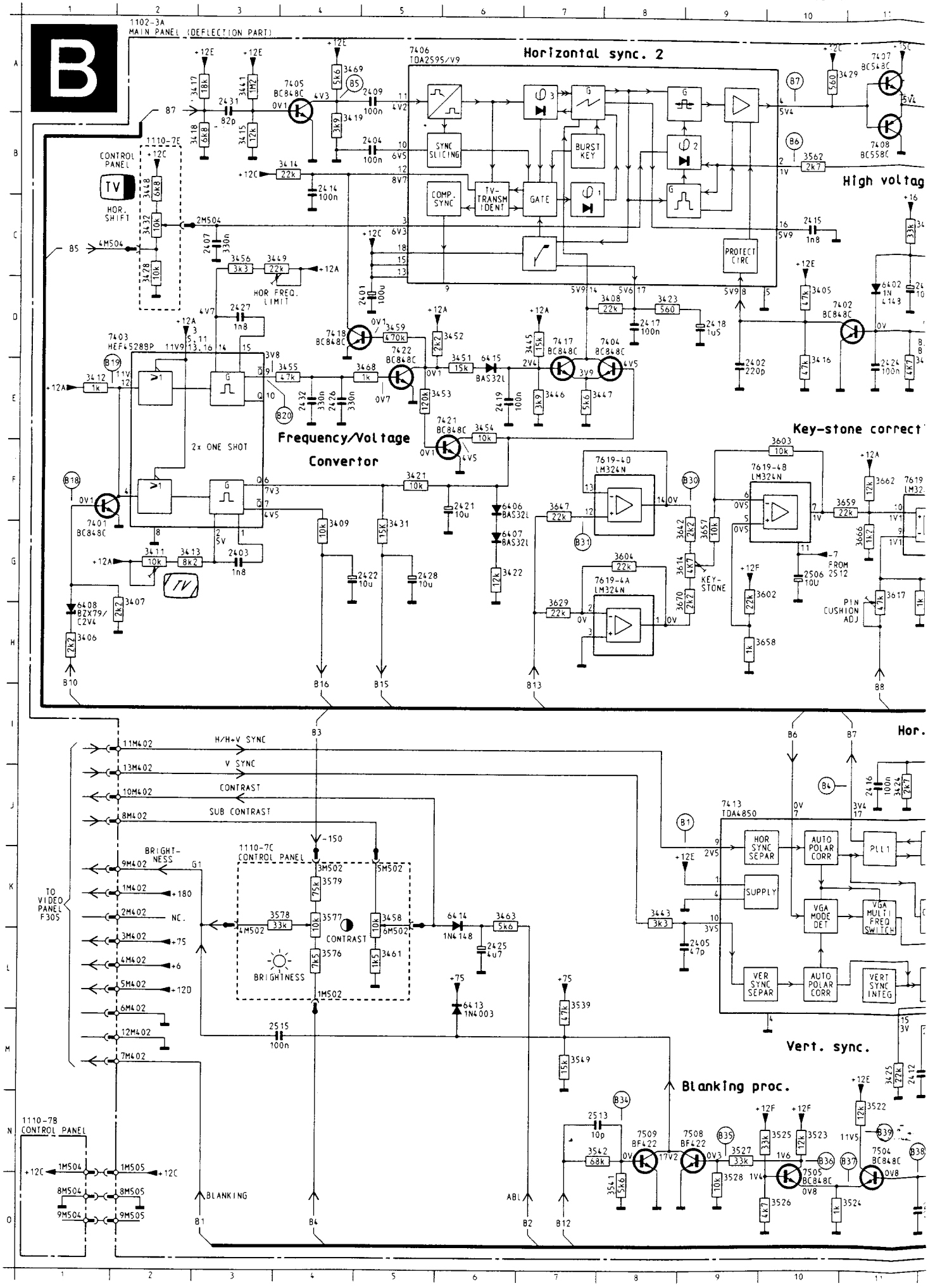
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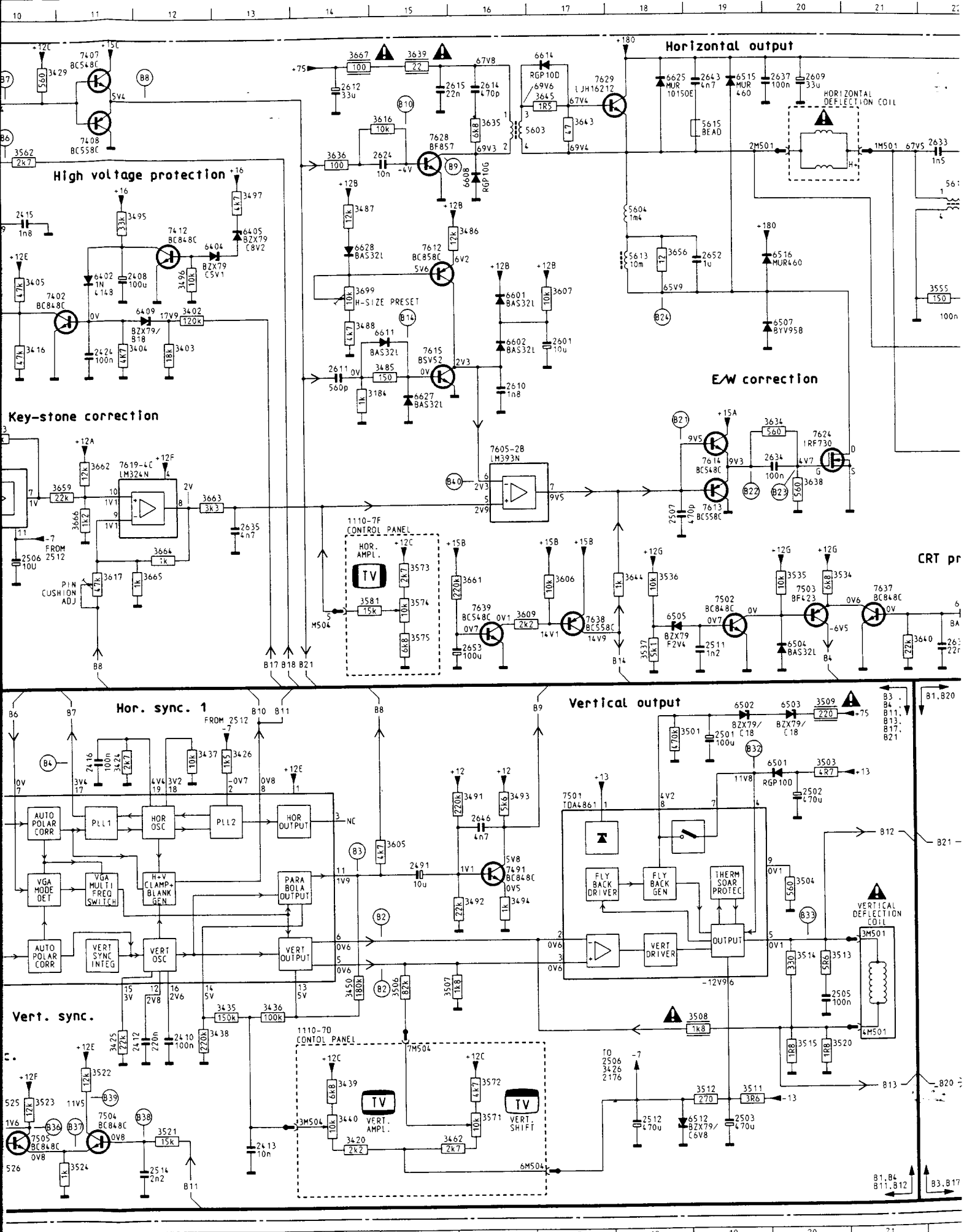
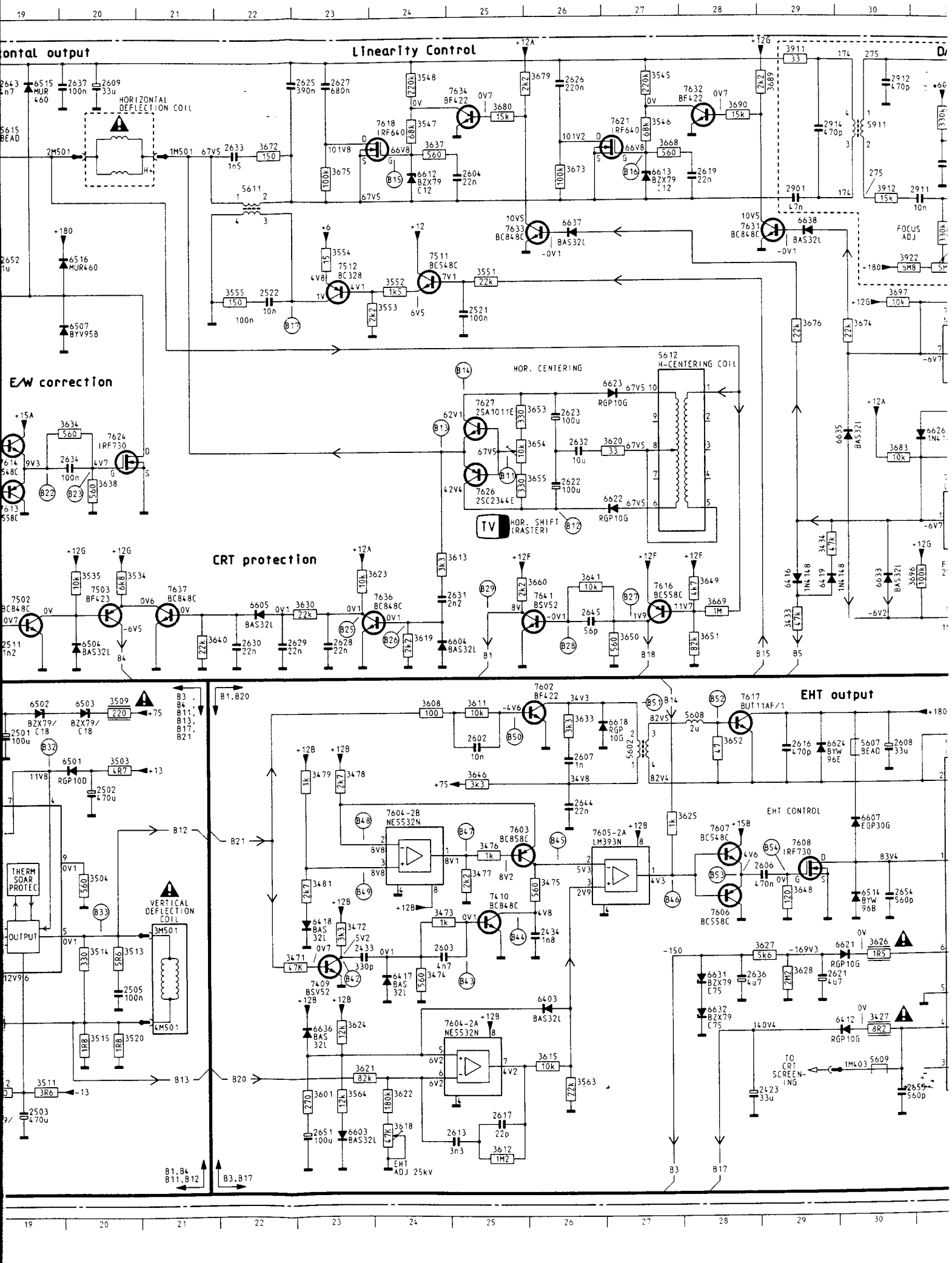
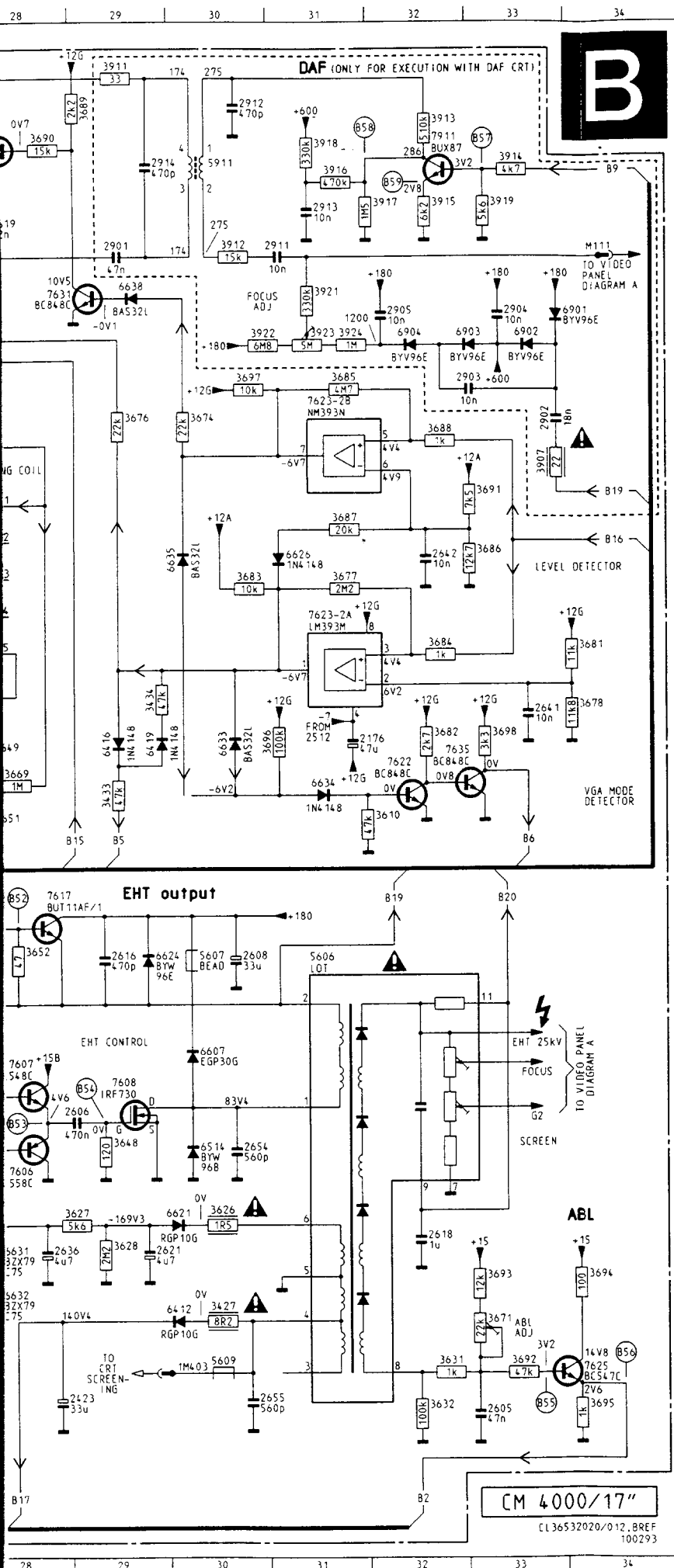
1102-3A
MAIN PANEL (DEFLECTION PART)
Horizontal sync. 2
7406 TDA2595/V9
SYNC SLICING
BURST KEY
COMP. SYNC
TV-TRANSM IDENT
GATE
PROTECT CIRC
HOR. SHIFT
HOR FREQ. LIMIT
Frequency/Voltage Convertor
2x ONE SHOT
High voltag
Key-stone correct
7619-4D LM324N
7619-4B LM324N
7619-4A LM324N
KEY-STONE
PIN CUSHION ADJ
FROM 2512
Hor.
7413 TDA4850
HOR SYNC SEPAR
AUTO POLAR CORR
PLL1
SUPPLY
VGA MODE DET
VGA MULTI FREQ SWITCH
VER SYNC SEPAR
VERT SYNC INTEG
Vert. sync.
Blanking proc.
H/H+V SYNC
V SYNC
CONTRAST
SUB CONTRAST
BRIGHT-NESS
TO VIDEO PANEL F30S
1110-7C CONTROL PANEL
1110-7E CONTROL PANEL
1110-7B CONTROL PANEL
BLANKING
ABL


Horizontal output
High voltage protection
Key-stone correction
E/W correction
CRT pr
Hor. sync. 1
Vertical output
Vert. sync.
HORIZONTAL DEFLECTION COIL
VERTICAL DEFLECTION COIL
1110-7F CONTROL PANEL
1110-7D CONTOL PANEL
H-SIZE PRESET
PIN CUSHION ADJ
AUTO POLAR CORR
PLL1
PLL2
HOR OSC
HOR OUTPUT
VGA MODE DET
VGA MULTI FREQ SWITCH
H+V CLAMP+ BLANK GEN
PARA BOLA OUTPUT
VERT SYNC INTEG
VERT OSC
VERT OUTPUT
FLY BACK DRIVER
FLY BACK GEN
THERM SOAR PROTEC
VERT DRIVER
OUTPUT
HOR. AMPL.
VERT. AMPL.
VERT. SHIFT
TV


Linearity Control
E/W correction
CRT protection
HOR. CENTERING
H-CENTERING COIL
HOR. SHIFT (RASTER)
HORIZONTAL DEFLECTION COIL
VERTICAL DEFLECTION COIL
EHT output
EHT CONTROL
FOCUS ADJ
THERM SOAR PROTEC
OUTPUT
TO CRT SCREEN-ING
EHT ADJ 25kv



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B	2409	A 5	3432	C 2	3620	F27	6419	H29			
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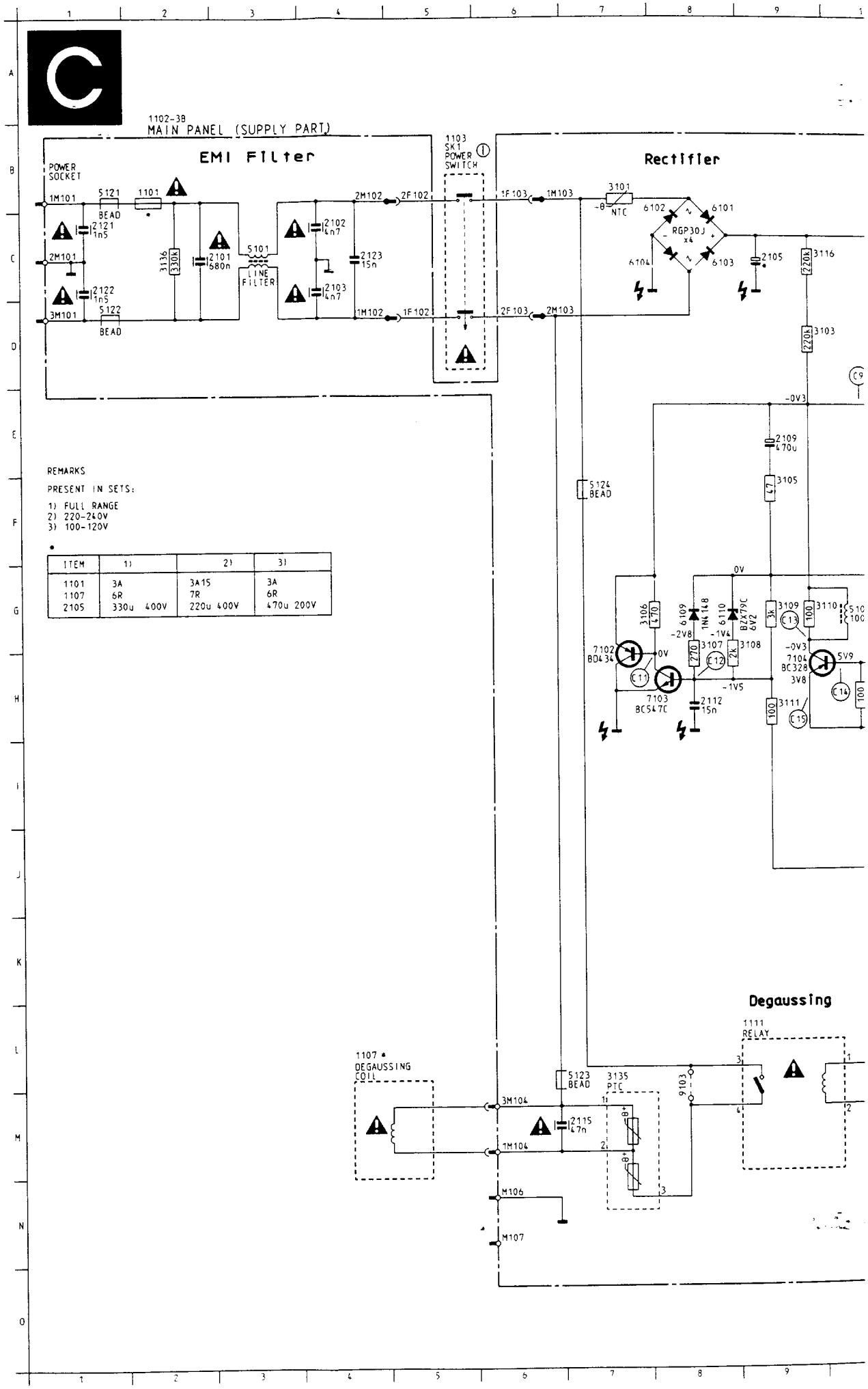
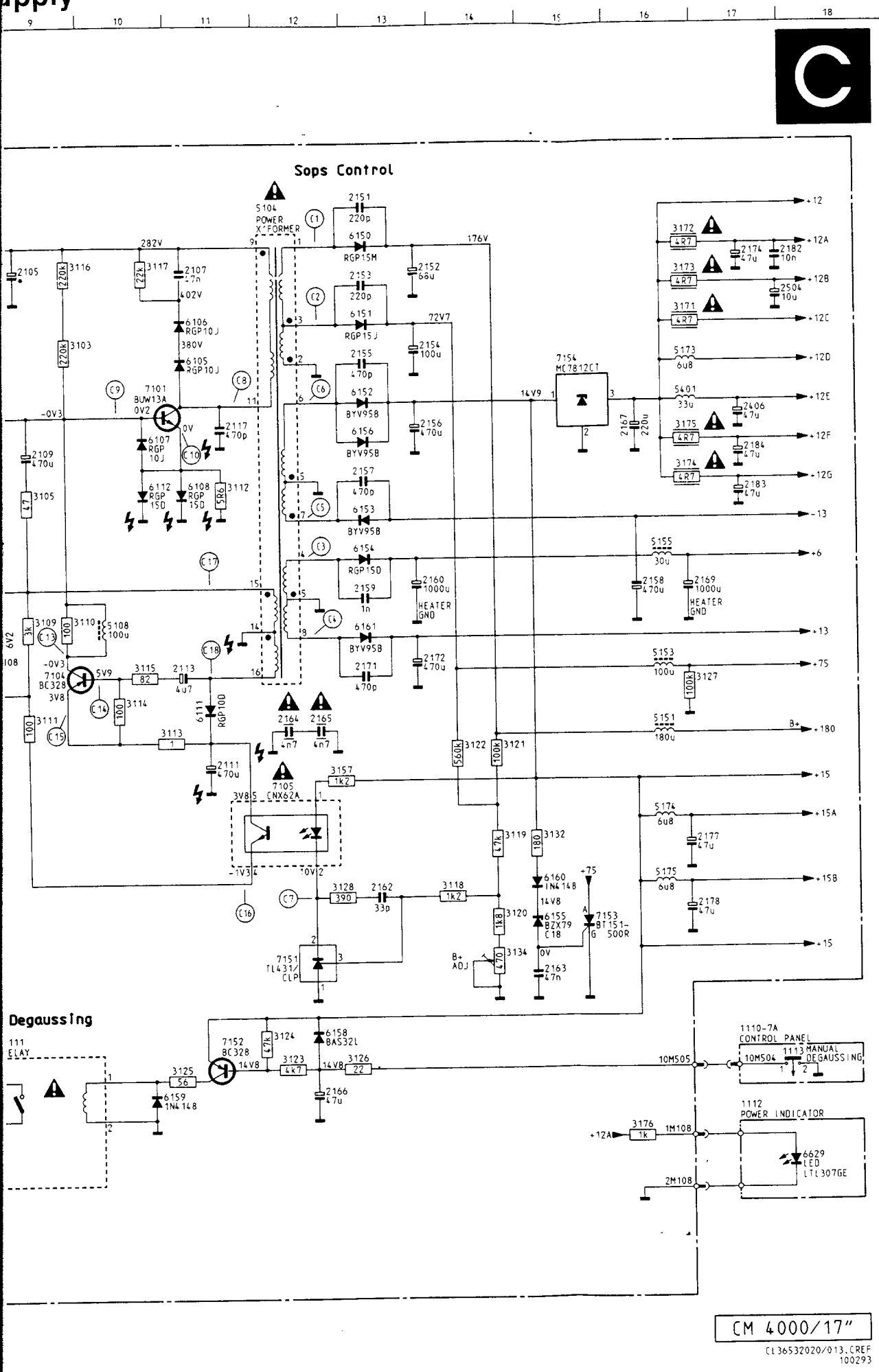
	3411	G 2	3581	H14	5611	C22	7634	A25			
	3412	E 1	3601	N23	5612	E27	7635	H33			
	3413	G 2	3602	G 9	5613	C18	7636	H24			
	3414	B 4	3603	F10	5615	B19	7637	H21			
	3415	B 3	3604	G 8	5911	B30	7638	H17			
	3416	D10	3605	K15	6402	D11	7639	H16			


C
1102-3B
MAIN PANEL (SUPPLY PART)
EMI Filter
Rectifier
POWER SOCKET
1M101
2M101
3M101
5121
BEAD
5122
BEAD
1101
2121 1n5
2122 1n5
3136 330k
2101 680n
5101
LINE FILTER
2102 4n7
2103 4n7
2123 15n
2M102
2F102
1M102
1F102
1103 SK1 POWER SWITCH
1F103
1M103
2F103
2M103
3101 NTC
6102
6101
RGP30J x4
6104
6103
2105
3116 220k
3103 220k
-0V3
2109 470u
3105 47
5124 BEAD
0V
3106 470
6109 1N4148
-2V8
6110 BZX79C 6V2
-1V4
3109 3k
C13
3110 100
5101 100
7102 BD434
C11
7103 BC547C
C12
3107 270
3108 2k
-1V5
2112 15n
7104 BC328
5V9
3V8
C14
100
3111 100
C15
REMARKS
PRESENT IN SETS:
1) FULL RANGE
2) 220-240V
3) 100-120V
*
ITEM | 1) | 2) | 3)
1101 | 3A | 3A15 | 3A
1107 | 6R | 7R | 6R
2105 | 330u 400V | 220u 400V | 470u 200V
Degaussing
1111 RELAY
1107 * DEGAUSSING COIL
5123 BEAD
3135 PTC
9103
2115 47n
3M104
1M104
M106
M107



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	1102	A 2	5155	J15
	1103	B 5	6156	E13
	1107	L 4	6158	L12
A	1110	L17	6159	L10
	1111	L 9	6160	J15
	1112	M17	6161	G13
	1113	L18	6629	M18
	2101	C 2	7101	D11
	2102	C 4	7102	H 7
	2103	C 4	7103	H 8
	2105	C 9	7104	H 9
B	2107	C11	7105	I12
	2109	E 9	7151	K12
	2111	I11	7152	L11
	2112	H 8	7153	J15
	2113	H11	7154	D15
	2115	M 7	9103	L 8
	2117	E11		
	2121	C 1		
C	2122	C 1		
	2123	C 4		
	2151	B13		
	2152	C13		
	2153	C13		
	2154	D13		
	2155	D13		
D	2156	E13		
	2157	E13		
	2158	G16		
	2159	G13		
	2160	G13		
	2162	J13		
	2163	K15		
	2164	H12		
E	2165	H12		
	2166	L12		
	2167	E16		
	2169	G16		
	2171	H13		
	2172	H13		
	2174	C17		
	2177	J16		
F	2178	J16		
	2182	C18		
	2183	F17		
	2184	E17		
	2406	E17		
	2504	C18		
	3101	B 7		
G	3103	D 9		
	3105	F 9		
	3106	G 7		
	3107	G 8		
	3108	G 9		
	3109	G 9		
	3110	G 9		
	3111	H 9		
H	3112	E11		
	3113	H11		
	3114	H10		
	3115	H10		
	3116	C 9		
	3117	C10		
	3118	J14		
I	3119	I14		
	3120	J14		
	3121	H14		
	3122	H14		
	3123	L12		
	3124	L12		
	3125	L11		
	3126	L13		
J	3127	H16		
	3128	J12		
	3132	I15		
	3134	K14		
	3135	L 7		
	3136	C 2		
	3157	I12		
K	3171	D16		
	3172	C16		
	3173	C16		
	3174	E16		
	3175	E16		
	3176	M16		
	5101	C 3		
	5104	B12		
L	5108	G10		
	5121	B 1		
	5122	D 1		
	5123	L 7		
	5124	F 7		
	5151	H16		
	5153	H16		
M	5155	F16		
	5173	D16		
	5174	I16		
	5175	J16		
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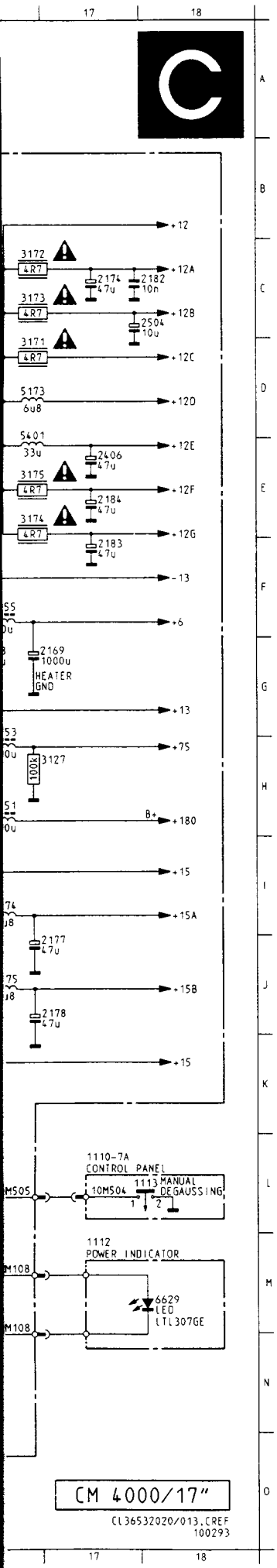
	6102	C 8		
	6103	C 8		
N	6104	C 8		
	6105	D11		
	6106	D11		
	6107	E10		
	6108	F11		
	6109	G 8		
	6110	G 8		
	6111	H11		
O	6112	F10		
	6150	C13		
	6151	D13		
	6152	E13		
	6153	F13		

Wave forms



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A	1110	L17	6159	L10
	1111	L 9	6160	J15
	1112	M17	6161	G13
	1113	L18	6629	M18
	2101	C 2	7101	D11
	2102	C 6	7102	H 7
	2103	C 4	7103	H 8
	2105	C 9	7104	H 9
B	2107	C11	7105	J12
	2109	E 9	7151	K12
	2111	I11	7152	L11
	2112	H 8	7153	J15
	2113	H11	7154	D15
	2115	M 7	9103	L 8
	2117	E11		
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C	2122	C 1		
	2123	C 4		
	2151	B13		
	2152	C13		
	2153	C13		
	2154	D13		
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	2164	H12		
E	2165	H12		
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	2167	E16		
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	2171	H13		
	2172	H13		
	2174	C17		
F	2177	J16		
	2178	J16		
	2182	C18		
	2183	F17		
	2184	E17		
	2406	E17		
	2504	C18		
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G	3103	D 9		
	3105	F 9		
	3106	G 7		
	3107	G 8		
	3108	G 9		
	3109	G 9		
	3110	G 9		
H	3111	H 9		
	3112	E11		
	3113	H11		
	3114	H10		
	3115	H10		
	3116	C 9		
	3117	C10		
	3118	J14		
I	3119	I14		
	3120	J14		
	3121	H14		
	3122	H14		
	3123	L12		
	3124	L12		
	3125	L11		
	3126	L13		
J	3127	H16		
	3128	J12		
	3132	I15		
	3134	K14		
	3135	L 7		
	3136	C 2		
	3157	I12		
K	3171	D16		
	3172	C16		
	3173	C16		
	3174	E16		
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N	6104	C 8		
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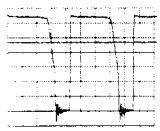
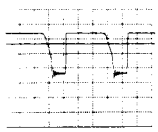
	6109	G 8		
	6110	G 8		
	6111	H11		
O	6112	F10		
	6150	C13		
	6151	D13		
	6152	E13		
	6153	F13		

C1 5104-1



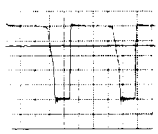
T=21.6us
Δv=720v AC

C2 5104-3



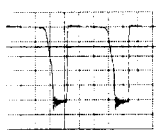
T=20.9us
Δv=312v AC

C3 5104-4



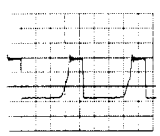
T=22.4us
Δv=26.8v AC

C4 5104-8



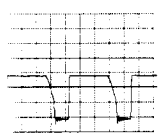
T=21.1us
Δv=58.4v AC

C5 5104-7



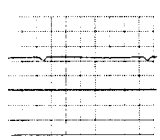
T=21.3us
Δv=59.2v AC

C6 5104-6



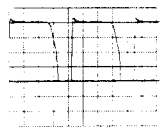
T=21.2us
Δv=65.6v AC

C7 7105-2



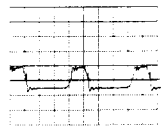
T=14.2ms
Δv=1.2v AC

C8 7101-c



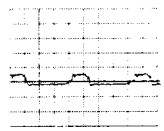
T=21.2us
Δv=420v AC

C9 7101-b



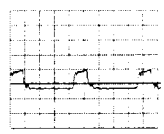
T=21.0us
Δv=3.44v AC

C10 7101-e



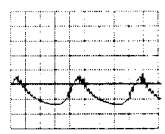
T=21.1us
Δv=1.6v AC

C11 7102-b



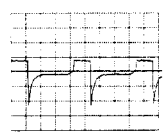
T=21.7us
Δv=2.48v AC

C12 7103-b



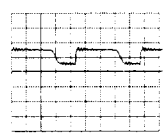
T=20.9us
Δv=4.16v AC

C13 7104-c



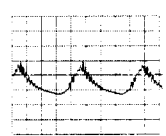
T=21.2us
Δv=15.2v AC

C14 7104-b



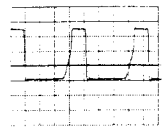
T=22.0us
Δv=6.4v AC

C15 7105-4



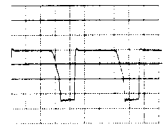
T=20.9us
Δv=4.4v AC

C16 5104-15

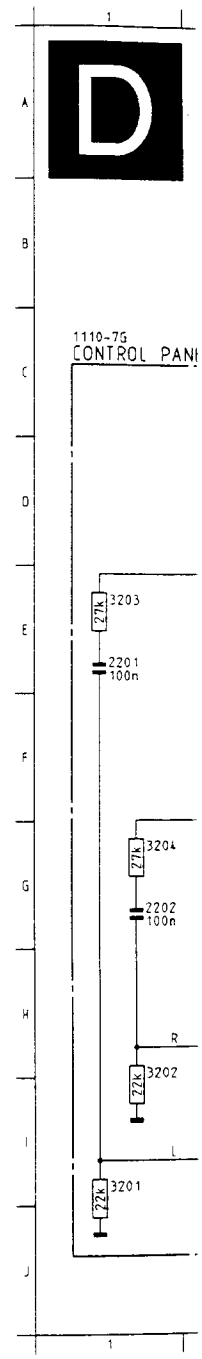


T=21.0us
Δv=17.8v AC

C17 5104-16

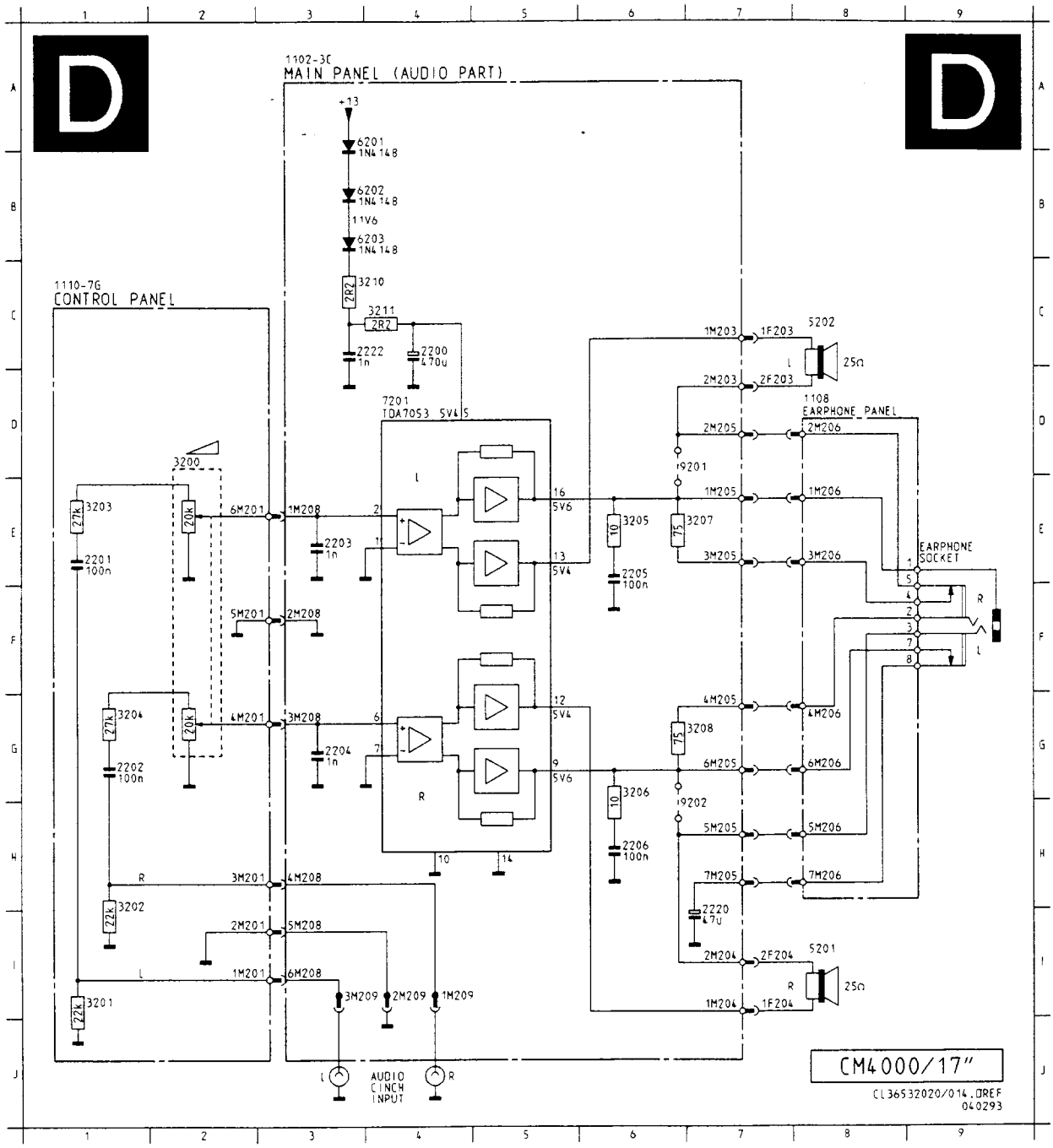


T=21.8us
Δv=18.2v AC



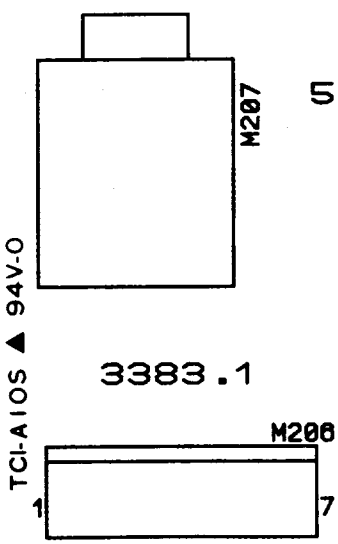
Earphone panel c

Audio



1102 A 3
1108 D 8
1110 C 1
2200 C 4
2201 E 1
2202 G 1
2203 E 3
2204 G 3
2205 E 6
2206 H 6
2220 I 7
2222 C 3
3200 D 2
3201 I 1
3202 H 1
3203 E 1
3204 G 1
3205 E 6
3206 G 6
3207 E 6
3208 G 6
3210 C 3
3211 C 4
5201 I 8
5202 C 8
6201 A 3
6202 B 3
6203 B 3
7201 D 4
9201 D 6
9202 H 6

Earphone panel comp. side



Electrical instructions

General:

When carry-out the electrical settings in many cases a video signal must be applied to the monitor.
A computer with an "ATI VGA 1024 V6-1.04 / PH BETA 4" interface card (1024*768) is used as the video signal source. The signal patterns are selected from the service test software package.

Installation instructions for the ATI interface card:

- Place the monitor (if possible) in east-west direction.
- Place the ATI interface card in the computer.
- Select the "Vsetup" file from the "utility disk" belonging to the card.
- Select "8 bits" or "16 bits" ROM operation depends on the computer type.
- Select "analog monitor"
- Select "Magnavox CM5000" as the monitor type.
- Re-boot your computer again.
- Put the floppy disk with the "service test software" package in the computer and select the test pattern indicated for the following settings.

1. B+ supply voltage (3134)

- Apply a video signal in the 640*480 with 31.5kHz / 60Hz mode.
- Select the "cross-hatch" pattern.
- Set the brightness front control 3577 and the contrast front control 3458 to the minimum position.
- Pre-set trimming potentiometer 3134 and 3618 in mid position.
- Connect a DC voltmeter between the "+" pole of capacitor 2152 (on power supply) and ground (common ground).
- Set the B+ trimming potentiometer 3134 so that the reading on the DC voltmeter is 180V ± 0.5V.

2. High voltage EHT (3618)

- Turn off the power.
- Connect a "high voltage voltmeter" between the high-voltage connection of the picture tube and earth.
- Turn on the power.
- Set the contrast front control 3458 to the maximum position.
- Set H-width front control 3574 at mechanical minimum position.
- Set the EHT trimming potentiometer 3618 so that the high-voltage voltmeter reads 25kV ± 0.2kV.
- Turn off the power.
- Remove the "high voltage voltmeter" from the picture tube.
- Turn on the power again.

3. Line frequency limit adjustment (3449)

Method 1.

- Apply a video signal in the 1024*768 with 56kHz / 70Hz mode.
- Select the "cross-hatch" pattern.
- Connect an oscilloscope to pin 9 of 7403.
- Using potentiometer 3449, set the timing of pulses at pin 9 of 7403 to 2.4 ± 0.02 µs.

Method 2.

- Apply a video signal in the 60.194kHz / 70.07Hz mode (with Chroma 2000).
- Select the "cross-hatch" pattern.
- Connect a DC Voltmeter between the collector of 7422 and ground (common ground).
- Adjust the trimming potentiometer 3449 so that the reading on the DC voltmeter is 4.0 V.

Chroma 2000 timing chart for special mode 60.194kHz / 70.07Hz.

	Horizontal	Vertical
Frame border	0.000 µs	0.000 ms
Total size	16.613 µs	14.272 ms
Display size	12.800 µs	13.599 ms
Rear porche	1.920 µs	0.513 ms
Sync width	1.813 µs	0.106 ms
Sync polarity	+/-	+/-

4. Horizontal synchronisation (3411, 3654)

- Set the contrast front control 3458 to the maximum position.
- Apply a video signal in the 1024*768 with 56kHz / 70Hz mode.
- Select the "cross-hatch" pattern.
- Turn off the power.
- Short the junction of 2414 and 7406 pin 12 to ground.
- Turn on the power.
- Adjust trimming potentiometer 3411 until the picture stands straight.
- Turn off the power.
- Remove the grounding from junction of 2414 and 7406.
- Turn on the power.
- Set potentiometer 3654 for the correct horizontal centering of the whole raster.

5. Focus setting

- Apply a video signal in the 640*480 with 31.5kHz / 60Hz mode.
- Select the "M" pattern.
- Set the brightness front control 3577 to mid-position and contrast front control 3458 to maximum position.
- Adjust focus potentiometer (top knob on the line output transformer) so that the picture at 2/3 of the diagonal lines (from centre to four corners) of the displayed screen is as sharp as possible.

6. Adjustment of pre-size (3699) for "Apple-MAC"

- Apply a video signal in the 640*480 with 35.0kHz / 67Hz mode.
- Select the "cross-hatch" pattern.
- Set the brightness front control 3577 and contrast front control 3458 in the mechanical mid-position.
- Adjust the H-width to maximum by H-size front control 3574.
- Adjust the pre-size such that the picture reach to edge by 3699.

Chroma 2000 timing chart for special mode 35.0kHz / 67Hz. 640*480 pixel = 30.240MHz.

	Horizontal	Vertical
Frame border	0.000 µs	0.000 ms
Total size	28.571 µs	14.272 ms
Display size	21.164 µs	13.599 ms
Rear porche	3.175 µs	0.513 ms
Sync width	2.116 µs	0.106 ms
Sync polarity	+/-	+/-
Serration pulse	RS343A type	sync on screen
Pulse width	2.116 µs	
No. per H	1	

7. Adjustment of cut-off points

* VG2 (bottom knob on the line output transformer)
* Cut-off points of the picture tube (3378, 3383, 3388)
* White "D" (3334, 3335, 3336, 3316)

- Pre-set trimming potentiometers 3334, 3335, 3336 and 3378, 3383, 3388 to the mechanical mid-position.
- Apply a video signal (full white) in the 640*480 with 31.5kHz / 60 Hz mode.
- Set the brightness front control 3577 to the click position and contrast front control 3458 to the mechanical minimum position.
- Set VG2 potentiometer on the line output transformer to minimum position.
- Using the VG2 setting key, increase the VG2 voltage until a colour is just visible (the colour may be red, green or blue).
- Then set the cut-off points trimming potentiometer belonging to the two colours not yet visible (3378, 3383 or 3388) so that an optimum white background (raster) colour is obtained.
- Set the contrast front control 3458 to maximum in order to check that the background (raster) colour remains the same even at maximum contrast.
- Then set the contrast front control 3458 to the central position again.

7.1 White "D" (3334, 3335, 3336, 3316)

- Set the contrast front control 3458 to maximum position.
- Set the brightness front control 3577 at centre click position.
- Adjust potentiometer 3334, 3335 and 3336 to the same light output level so that an optimal display colour (white "D") is obtained.
- If necessary, adjust sub-contrast potentiometer 3316 for the optimal light output of the video display (until the brightness no longer increases).

8. Picture geometry setting

- Set brightness front control 3577 and the contrast front control 3458 in the mechanical central position.
- Apply a video signal with cross-hatch pattern in the 640*480 with 31.5kHz / 60Hz mode.

8.1 Horizontal image centering (3654, 3432)

- Set potentiometer 3654 for the correct horizontal centering of the whole raster.
- Adjust H-shift front control 3432 for the correct horizontal centering of the video display.

8.2 Horizontal width (3574)

- Adjust H-size front control 3574 for a picture width of 300mm

8.3 Vertical centering (3571)

- Adjust V-shift front control 3571 for the correct vertical centering of the video display.

8.4 Vertical height (3440)

- Adjust V-size front control 3440 for a picture height of 225mm.

8.5 East-west pincushion correction (3617)

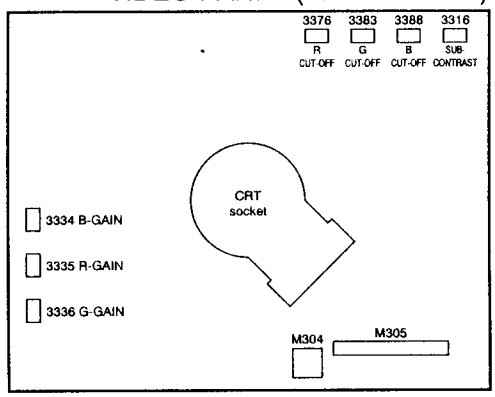
- Adjust potentiometer 3617 until the vertical lines on the left and right-hand sides of the screen are as straight as possible.

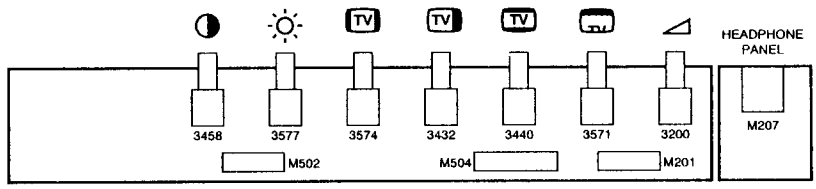
8.6 Trapezoid correction (3614)

- Adjust potentiometer 3614 so that an optimum square cross-hatch pattern is obtained.

LOCATION OF ADJUSTING COMPONENTS

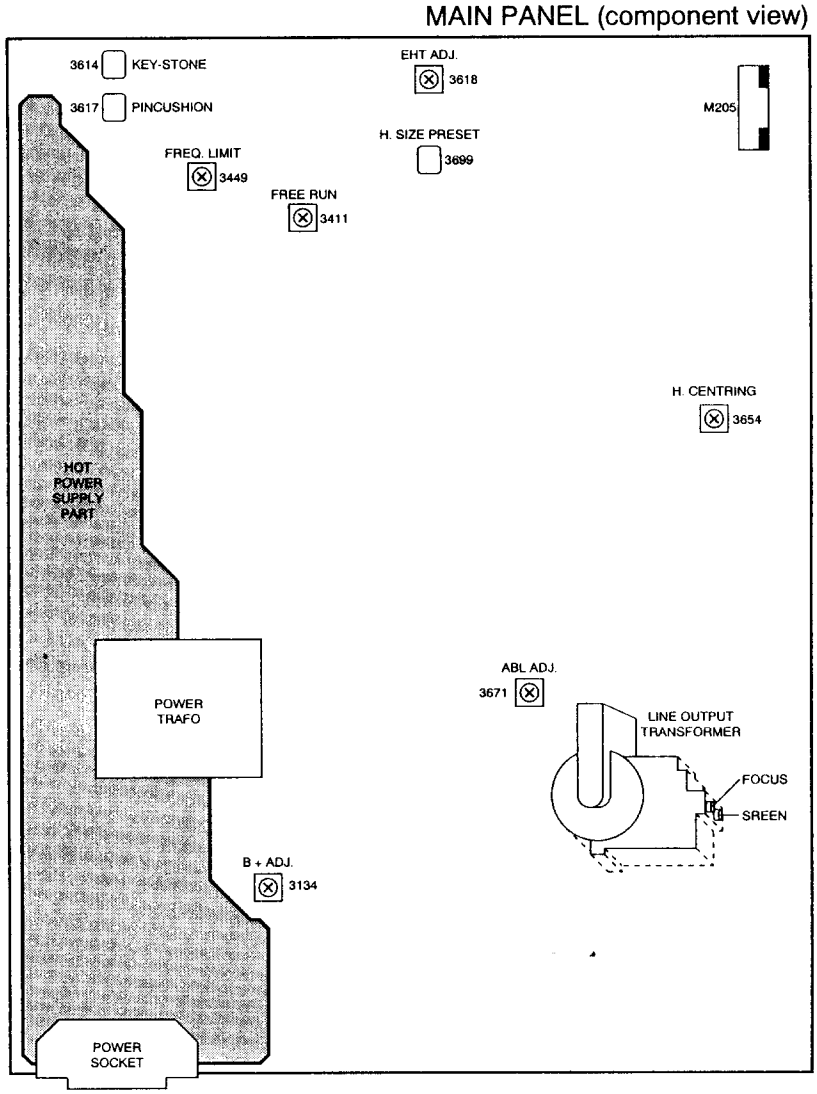
VIDEO PANEL (track side view)





CONTROL PANEL

MAIN PANEL (component view)



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9. Static convergence (see Fig.)

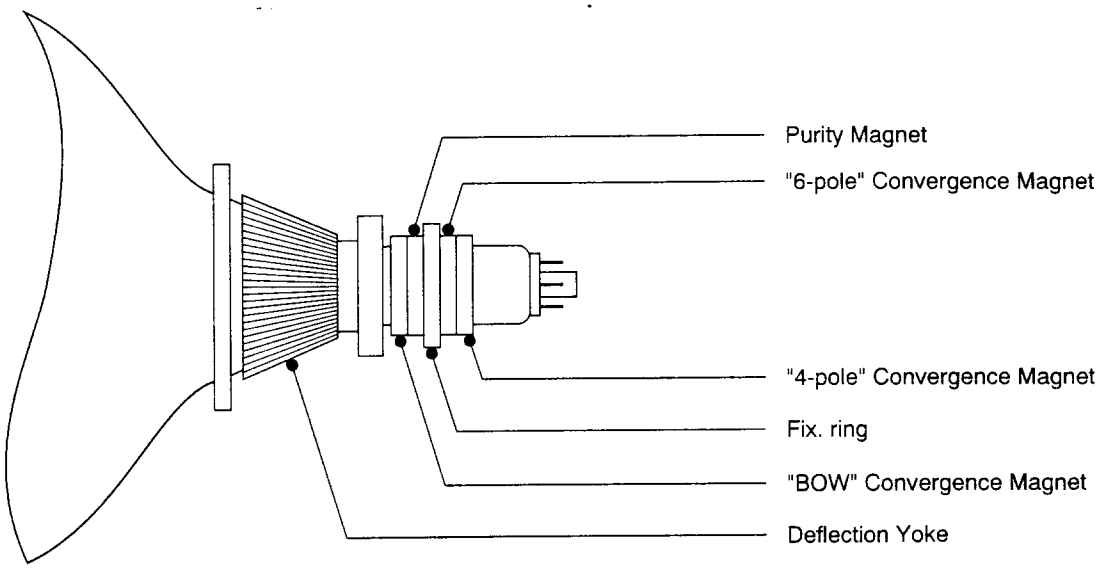
Introduction:

Slight deviation in the static convergence can be corrected by using three permanent pairs of magnets which are fitted around the neck of the picture tube. These are the 4-pole magnet and the 6-pole magnet. The 4-pole magnet move the outermost electron beams (R and B) parallel in the opposite direction from the other. The 6-pole magnet moves the outermost electron beams (R, B and G) parallel in the opposite direction from the other.
The magnetic field of the above magnets do not affect the centre of the picture tube neck.

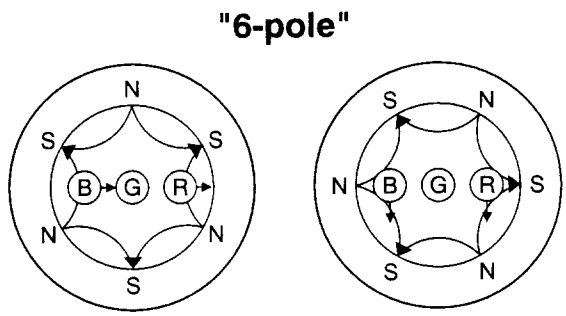
Setting:

- Before the static convergence setting can be made, the monitor must be switched on for 30 minutes.
- The focus setting must be made correctly (see focus setting).
- Signal: Cross-hatch pattern in the 1024*768 56kHz / 70Hz mode.
- Set the "tabs" of the 4-pole magnet in the neutral position.
  This is when the "tabs" are opposite one another. In this position the magnets do not affect the deflection of the "R" and "B" electron beams.
- Set the "tabs" of the 6-pole magnet in the neutral position, this is when the "tabs" are opposite one another. In this position the magnets do not affect the deflection of the "R B" and "G" electron beams.
- First set the 4-pole magnet optimally.
- Then set the 6-pole magnet optimally.
- If the convergence is not optimal now, then adjust to the optimal setting with the 4-pole magnet and then with the 6-pole magnet.

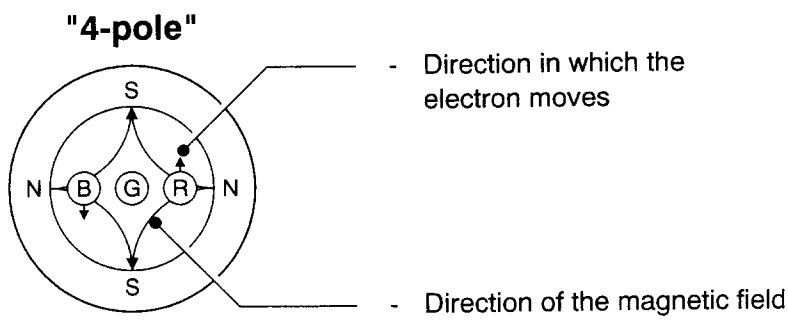
STATIC CONVERGENCE SYSTEM



"B" and "R" electron beam movement as a result of the 6-pole magnet



"B" and "R" electron beam movement as a result of the 4-pole magnet



Repair tips

Warning

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repiar can reduce life drasticlly.
When repairing, make sure that you are connected with the same potential as the mass of the unit via a wrist wrap with resistance.

Keep components and tools also at the same potential !

1. Servicing of SMDs (Surface Mounted Devices)

1.1 General cautions on handling and storage

a. Oxidation on the terminals of SMDs results in poor soldering. Do not handle SMDs with bare hands.
b. Avoid using storage places that are sensitive to oxidation such as places with sulphur or chlorine gas, direct sunlight, high temperatures or a high degree of humidity.
The capacitance or resistance value of the SMDs may be affected by this.
c. Rough handling of circuit boards containing SMDs may cause damage to the components as well as the circuit boards. Circuit boards containing SMDs should never be bent or flexed. Different circuit board materials expand and contract at different rates when heated or cooled
and the components and/or solder connections may be damaged due to the stress. Never rub or scrape chip components as this may cause the value of the component to change. Similarly, do not slide the circuit board across any surface.

1.2 Removal of SMDs

a. Heat the solder (for 2-3 seconds) at each terminal of the chip. By means of litz wire and a slight horizontal force, small components can be removed with the soldering iron. They can also be removed with a solder sucker (see Fig. 8.1A) or:
b. While holding the SMD with a pair of tweezers, take it off gently using the soldering iron's heat applied to each terminal (see Fig. 8.1B).
c. Remove the excess solder on the solder lands by means of litz wire or a solder sucker (see Fig. 8.1C).

Caution on removal:

a. When handling the soldering iron, use suitable pressure and be careful.
b. When removing the chip, do not use undue force with the pair of tweezers.
c. The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250°C).
d. The chip, once removed, must **never** be reused.

1.3 Attachment of SMDs

a. Locate the SMD on the solder lands by means of tweezers and solder the component on one side. Ensure that the component is positioned correctly on the solder lands (see Fig. 8.2A).
b. Next complete the soldering of the terminals of the component (see Fig. 8.2B).

Caution when attaching SMDs:

a. When soldering the SMD terminals, do not touch them directly with the soldering iron. The soldering should be done as quickly as possible; care must be taken to
avoid damage to the terminals of the SMDs themselves.
b. Keep the SMD's body in contact with the printed board when soldering.
c. The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250°C).
d. Soldering should not be done outside the solder land.
e. Soldering flux (of rosin) may be used, but should not be acidic.
f. After soldering, let the SMD cool down gradually at room temperature.
g. The quantity of solder must be proportional to the size of the solder land. If the quantity is too great, the SMD might crack or the solder lands might be torn loose from the printed board (see Fig. 8.3).

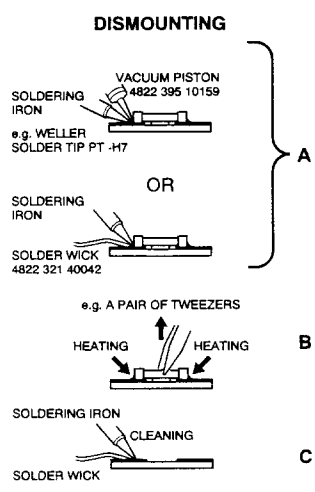


Fig. 8.1

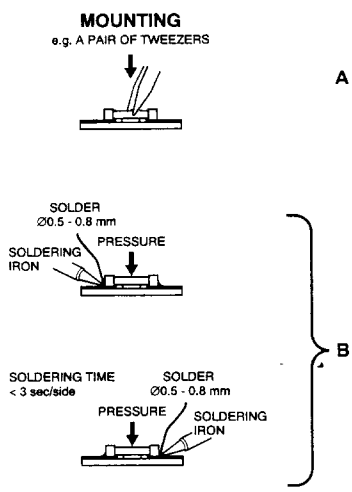


Fig. 8.2

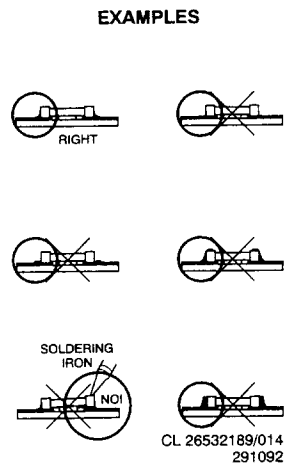
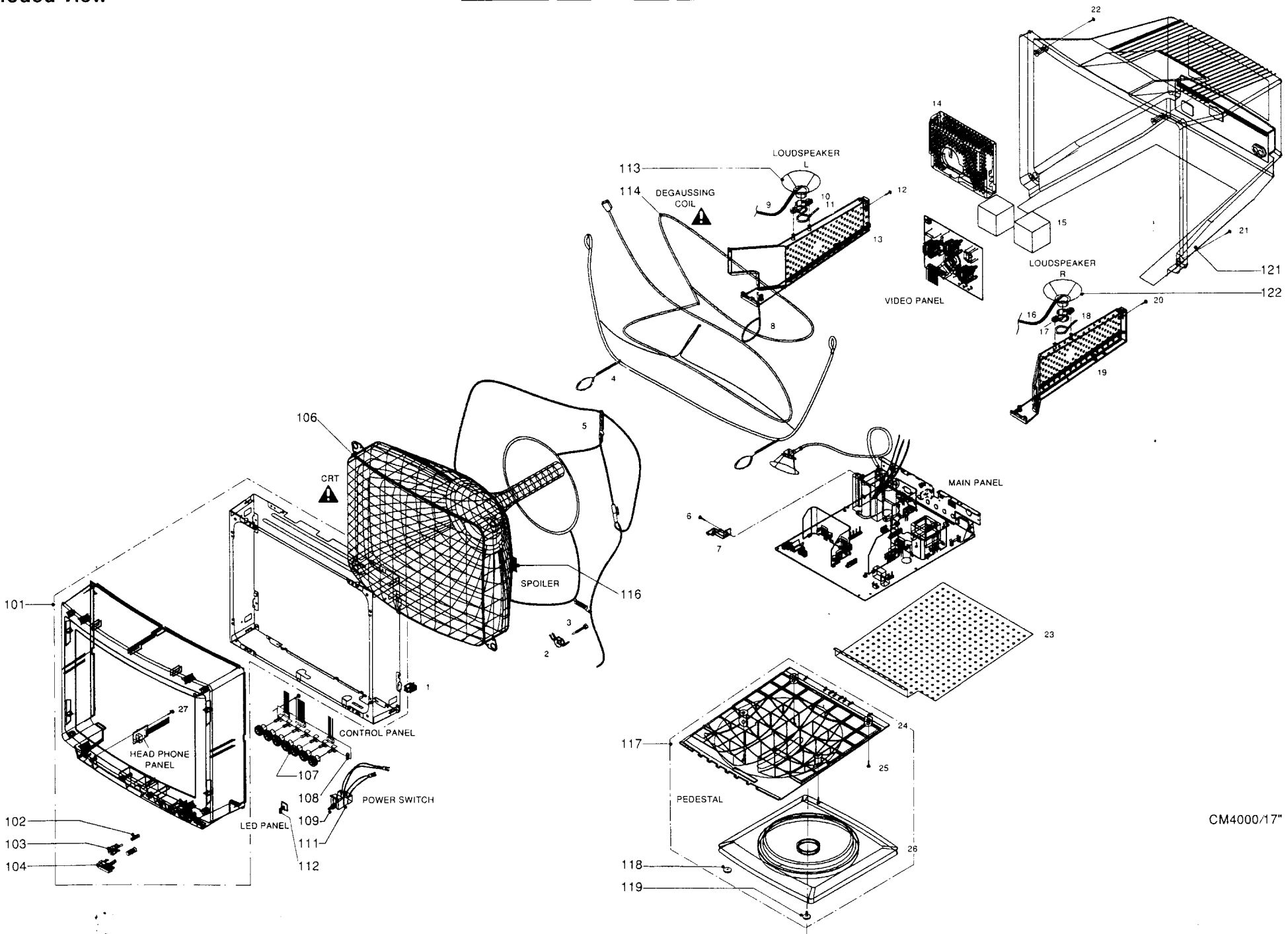


Fig. 8.3

Exploded view



Spare parts lists

Parts indicated on exploded view

101	4822 413 41782	Front cabinet
102	4822 492 52324	Spring for buttons
103	4822 410 61226	Degaussing push button
104	4822 410 61812	Power push button
106▲	4822 131 20537	CRT M41KXN23XX01(F)
107	4822 413 41784	Control knob
108	4822 276 13249	Degaussing switch
109▲	4822 276 11504	Power switch
111	4822 432 92868	Housing for switch
112	4822 130 82021	LED LTL307GE
113	4822 240 30642	Loudspeaker L
114▲	4822 157 70484	Degaussing coil
116	4822 526 20183	Spoiler
117	4822 462 10541	Pedestal
118	4822 466 61517	Pad
119	4822 502 13763	Screw
121	4822 438 20235	Rear cover
122	4822 240 30642	Loudspeaker R

Accessories

▲	4822 701 12461	Mains cord /00T
▲	4822 321 10621	Mains cord /05T
▲	4822 321 10977	Mains cord /06T
▲	4822 321 10942	Mains cord /75T
	4822 321 61711	Interface cable
	4822 263 50197	Adapter 15P D-Shell
	4822 321 61985	Interface cable audio
	4822 736 53347	Users manual

Main panel

Various

1101▲	4822 253 50145	Fuse 3.15A
1111	4822 280 70358	Relay
	4822 492 71337	Clamping spring for fuse
	4822 267 30987	2P Connector M102, M103
	4822 265 30891	2P Connector M104
	4822 265 20561	2P Connector M108, M204
	4822 267 31527	2P Connector M203
	4822 265 30896	3P Connector M209
	4822 265 30375	4P Connector M501
	4822 265 30888	6P Connector M208
	4822 265 31079	6P Connector M503
	4822 265 41205	7P Connector M205
	4822 265 41311	10P Connector M505
▲	4822 265 31003	AC Power socket
	4822 267 31525	RCA Audio jack
	4822 492 62076	Spring for transistors
	4822 255 40893	Plate for transistors
	5322 390 20011	Silicon grease

⊣⊢

2101▲	4822 121 70205	680nF 20% 250V
2102▲	4822 122 33535	4.7nF 20% 400V
2103▲	4822 122 33535	4.7nF 20% 400V
2105	4822 124 80532	220µF 400V
2107	4822 121 41984	47nF 10% 400V
2109	4822 124 40198	470µF 20% 16V
2111	4822 124 40198	470µF 20% 16V
2112	4822 121 43512	15nF 100V
2113	4822 124 40246	4.7µF 20% 63V
2115▲	4822 121 43385	47nF 20% 250V
2117	4822 126 12267	470pF 10% 2kV
2121▲	4822 122 33417	1.5nF 400V
2122▲	4822 122 33417	1.5nF 400V
2123	4822 121 70302	15nF 20% 250V
2151	4822 126 12356	220pF 10% 2kV
2152	4822 124 42158	68µF 20% 250V
2153	4822 126 12358	220pF 10% 500V
2154	4822 124 40755	100µF 20% 100V
2155	4822 122 33646	470pF 10% 500V
2156	4822 124 42144	470µF 63V
2157	4822 122 33646	470pF 10% 500V
2158	4822 124 42144	470µF 63V
2159	5322 122 32331	1nF 10% 100V
2160	4822 124 42172	1000µF 16V
2162	4822 126 11098	33pF 5% 50V
2163	4822 121 43695	47nF 10% 100V
2164▲	4822 122 33535	4.7nF 20% 400V
2165▲	4822 122 33535	4.7nF 20% 400V
2166	4822 124 80132	47µF 20% 25V
2167	4822 124 22666	220µF 20% 16V
2169	4822 124 42172	1000µF 16V
2171	4822 122 33646	470pF 10% 500V
2172	4822 124 42144	470µF 63V
2174	4822 124 22681	47µF 20% 16V
2176	4822 124 80132	47µF 20% 25V
2177	4822 124 80132	47µF 20% 25V
2178	4822 124 80132	47µF 20% 25V
2182	4822 122 32442	10nF 50V
2183	4822 124 22681	47µF 20% 16V
2184	4822 124 22681	47µF 20% 16V
2200	4822 124 42144	470µF 63V
2203	5322 122 31647	1nF 10% 63V
2204	5322 122 31647	1nF 10% 63V
2205	4822 121 43696	100nF 100V
2206	4822 121 43696	100nF 100V
2220	4822 124 22681	47µF 20% 16V
2222	5322 122 31647	1nF 10% 63V

⊣⊢

2401	4822 124 22678	100µF 20% 16V
2402	4822 122 31965	220pF 2% 63V
2403	4822 121 70185	1.8nF 2% 50V
2404	4822 122 33496	100nF 10% 63V
2405	4822 122 31772	47pF 2% 63V
2406	4822 124 22681	47µF 20% 16V
2407	4822 126 11456	330nF 10% 63V
2408	4822 124 22678	100µF 20% 16V
2409	4822 122 33496	100nF 10% 63V
2410	4822 121 43696	100nF 100V
2412	4822 121 43699	220nF 100V
2413	4822 122 32442	10nF 50V
2414	4822 122 33496	100nF 10% 63V
2415	4822 121 70185	1.8nF 2% 50V
2416	4822 122 33496	100nF 10% 63V
2417	4822 122 33496	100nF 10% 63V
2418	4822 124 42198	1.5µF 20% 63V
2419	4822 122 33496	100nF 10% 63V
2421	4822 124 22686	10µF 16V
2422	4822 124 22686	10µF 16V
2423	4822 124 42161	33µF 20% 250V
2424	4822 122 33496	100nF 10% 63V
2425	4822 124 40246	4.7µF 20% 63V
2426	4822 126 11456	330nF 10% 63V
2427	4822 121 70185	1.8nF 2% 50V
2428	4822 124 23539	10µF 20% 50V
2431	4822 122 31839	82pF 2% 63V
2432	4822 126 11456	330nF 10% 63V
2433	5322 122 31842	330pF 2% 63V
2434	4822 121 70185	1.8nF 2% 50V
2491	4822 124 22686	10µF 16V
2501	4822 124 40255	100µF 20% 63V
2502	4822 124 42144	470µF 63V
2503	4822 124 42144	470µF 63V
2504	4822 124 22686	10µF 16V
2505	4822 121 43696	100nF 100V
2506	4822 124 22686	10µF 16V
2507	4822 122 31727	470pF 2% 63V
2511	4822 122 32808	1.2nF 10% 63V
2512	4822 124 40198	470µF 20% 16V
2513	4822 122 31971	10pF 2% 63V
2514	4822 122 31644	2.2nF 10% 63V
2515	4822 121 43696	100nF 100V
2521	4822 121 43696	100nF 100V
2522	4822 121 43693	10nF 100V
2601	4822 124 22686	10µF 16V
2602	4822 122 32442	10nF 50V
2603	4822 122 31784	4.7nF 10% 50V
2604	4822 121 43907	22nF 20% 250V
2605	4822 121 40336	47nF 10% 250V
2606	4822 121 43698	470nF 100V
2607	4822 122 33968	1nF 5% 500V
2608	4822 124 42161	33µF 20% 250V
2609	4822 124 42161	33µF 20% 250V
2610	4822 121 70185	1.8nF 2% 50V
2611	4822 122 31773	560pF 2% 63V
2612	4822 124 42161	33µF 20% 250V
2613	5322 122 33446	3.3nF 10% 63V
2614	4822 122 33646	470pF 10% 500V
2615	4822 121 43907	22nF 20% 250V
2616	4822 126 12267	470pF 10% 2kV
2617	4822 122 32482	22pF 2% 63V
2618	4822 121 70301	1µF 100V
2619	4822 121 43907	22nF 20% 250V
2621	4822 124 42155	4.7µF 250V
2622	4822 124 42145	100µF 20% 25V
2623	4822 124 42145	100µF 20% 25V
2624	4822 122 32442	10nF 50V
2625	4822 121 40479	390nF 10% 250V
2626	4822 121 43691	220nF 250V
2627	4822 121 70203	680nF 250V

Spare parts lists

Main panel

2628	4822 122 31797	22nF 10% 63V
2629	4822 122 31797	22nF 10% 63V
2630	4822 122 31797	22nF 10% 63V
2631	4822 126 10206	2.2nF 10% 500V
2632	4822 124 80276	10µF 20% 25V
2633	4822 121 43906	1.5nF 10% 400V
2634	4822 121 43696	100nF 100V
2635	4822 122 31784	4.7nF 10% 50V
2636	4822 124 42155	4.7µF 250V
2637	4822 121 41689	100nF 10% 250V
2641	4822 122 32442	10nF 50V
2642	4822 122 32442	10nF 50V
2643	4822 126 12096	4.7nF 5% 1.6kV
2644	4822 121 43907	22nF 20% 250V
2645	4822 122 31774	56pF 2% 63V
2646	4822 122 31784	4.7nF 10% 50V
2651	4822 124 22678	100µF 20% 16V
2652	4822 121 70095	1µF 10% 100V
2653	4822 124 42145	100µF 20% 25V
2654	4822 126 11455	560pF 10% 2kV
2655	4822 122 40425	560pF 10% 500V

3101	4822 116 30425	7Ω 15% NTC
3103	4822 050 22204	220k 1% 0.6W
3105	4822 116 83915	47Ω 5% 3W
3106	4822 050 24701	470Ω 1% 0.6W
3107	4822 116 52217	270Ω 5% 0.5W
3108	4822 050 12002	2k 1% 0.4W
3109	4822 050 23002	3k 1% 0.6W
3110	4822 050 21001	100Ω 1% 0.6W
3111	4822 050 21001	100Ω 1% 0.6W
3112	4822 050 25608	5Ω6 1% 0.6W
3113	4822 050 21008	1Ω 1% 0.6W
3114	4822 050 21001	100Ω 1% 0.6W
3115	4822 116 82872	82Ω 5%
3116	4822 050 22204	220k 1% 0.6W
3117	4822 116 80388	22k 5W
3118	4822 050 21202	1k2 1% 0.6W
3119	4822 050 24703	47k 1% 0.6W
3120	4822 050 21802	1k8
3121	4822 053 10104	100k 5% 1W
3122	4822 050 25604	560k 1% 0.6W
3123	4822 051 10472	4k7 2% 0.25W
3124	4822 051 10473	47k 5% 0.25W
3125	4822 050 25609	56Ω 1% 0.6W
3126	4822 116 52186	22Ω 5%
3127	4822 050 21004	100k 1% 0.6W
3128	4822 051 10391	390Ω 2% 0.25W
3132	4822 050 21801	180Ω 1% 0.6W
3134	4822 101 10927	470Ω Potmeter
3135	4822 116 40144	12Ω PTC
3136	4822 053 21334	330k 5% 0.5W
3157	4822 050 21202	1k2 1% 0.6W
3171 ▲	4822 052 10478	4Ω7 5% 0.33W NFR25
3172 ▲	4822 052 10478	4Ω7 5% 0.33W NFR25
3173 ▲	4822 052 10478	4Ω7 5% 0.33W NFR25
3174 ▲	4822 052 10478	4Ω7 5% 0.33W NFR25
3175 ▲	4822 052 10478	4Ω7 5% 0.33W NFR25
3176	4822 051 10102	1k 2% 0.25W
3205	4822 050 21009	10Ω 1% 0.6W
3206	4822 050 21009	10Ω 1% 0.6W
3207	4822 050 27509	75Ω 1% 0.6W
3208	4822 050 27509	75Ω 1% 0.6W
3210	4822 050 22208	2Ω2 1% 0.6W
3211	4822 050 22208	2Ω2 1% 0.6W
3402	4822 116 80556	120k 1% 0.25W
3403	4822 050 21803	18k 1% 0.6W
3404	4822 116 80942	4k7 1% 0.25W
3405	4822 051 10473	47k 2% 0.25W
3406	4822 050 22202	2k2 1% 0.6W
3407	4822 051 20222	2k2 5% 0.1W
3408	4822 051 10223	22k 2% 0.25W
3409	4822 051 10103	10k 2% 0.25W
3411	4822 100 20166	10k Potmeter
3412	4822 051 10102	1k 2% 0.25W
3413	4822 051 10822	8k2 2% 0.25W
3414	4822 051 10223	22k 2% 0.25W
3415	4822 051 10123	12k 2% 0.25W
3416	4822 051 10473	47k 2% 0.25W
3417	4822 051 20183	18k 5% 0.1W
3418	4822 051 10682	6k8 2% 0.25W
3419	4822 051 10392	3k9 2% 0.25W
3421	4822 051 10103	10k 2% 0.25W
3422	4822 051 10123	12k 2% 0.25W
3423	4822 051 10561	560Ω 2% 0.25W
3424	4822 051 10272	2k7 2% 0.25W
3425	4822 051 10223	22k 2% 0.25W
3426	4822 050 21502	1k5 1% 0.6W
3427 ▲	4822 052 10828	8Ω2 5% 0.33W NFR25
3429	4822 050 15601	560Ω 1% 0.4W
3431	4822 051 10153	15k 2% 0.25W
3433	4822 050 24703	47k 1% 0.6W
3434	4822 051 10473	47k 2% 0.25W
3435	4822 051 10154	150k 2% 0.25W
3436	4822 051 10104	100k 2% 0.25W
3437	4822 051 10103	10k 2% 0.25W
3438	4822 051 10224	220k 2% 0.25W
3441	4822 051 10125	1M2 5% 0.25W
3443	4822 051 10332	3k3 2% 0.25W
3445	4822 051 10153	15k 2% 0.25W
3446	4822 051 10392	3k9 2% 0.25W
3447	4822 051 10562	5k6 2% 0.25W
3449	4822 100 11213	22k Potmeter
3450	4822 051 10184	180k 2% 0.25W
3451	4822 051 10153	15k 2% 0.25W
3452	4822 051 20222	2k2 5% 0.1W
3453	4822 051 10124	120k 2% 0.25W
3454	4822 051 10103	10k 2% 0.25W
3455	4822 051 10473	47k 2% 0.25W
3456	4822 051 10332	3k3 2% 0.25W
3459	4822 051 10474	470k 2% 0.25W
3463	4822 051 10562	5k6 2% 0.25W
3468	4822 051 10102	1k 2% 0.25W
3469	4822 051 10562	5k6 2% 0.25W
3471	4822 050 24703	47k 1% 0.6W
3472	4822 051 10332	3k3 2% 0.25W
3473	4822 051 10102	1k 2% 0.25W
3474	4822 051 10561	560Ω 2% 0.25W
3475	4822 051 10561	560Ω 2% 0.25W
3476	4822 051 10102	1k 2% 0.25W
3477	4822 051 20222	2k2 5% 0.1W
3478	4822 051 10272	2k7 2% 0.25W
3479	4822 051 10102	1k 2% 0.25W
3481	4822 051 10272	2k7 2% 0.25W
3484	4822 051 10102	1k 2% 0.25W
3485	4822 051 10151	150Ω 2% 0.25W
3486	4822 050 21203	12k 1% 0.6W
3487	4822 050 21203	12k 1% 0.6W
3488	4822 051 10472	4k7 2% 0.25W
3491	4822 116 81849	220k 5%
3492	4822 051 10223	22k 2% 0.25W
3493	4822 116 52289	5k6 5% 0.5W
3494	4822 051 10102	1k 2% 0.25W
3495	4822 051 10333	33k 2% 0.25W
3496	4822 051 10103	10k 2% 0.25W
3497	4822 051 10472	4k7 2% 0.25W
3501	4822 050 14704	470k 1% 0.4W
3503	4822 050 24708	4Ω7 1% 0.6W
3504	4822 051 10561	560Ω 2% 0.25W
3506	4822 050 28203	82k 1% 0.6W
3507	4822 050 21802	1k8
3508 ▲	4822 051 10182	1k8 2% 0.25W
3509 ▲	4822 052 11221	220Ω 5% 0.5W NFR25
3511	4822 050 23608	3Ω6 1% 0.6W
3512	4822 050 22701	270Ω 1% 0.6W
3513	4822 050 15608	5Ω6 1% 0.4W
3514	4822 050 23301	330Ω 1% 0.6W
3515	4822 050 21808	1Ω8 1% 0.6W
3520	4822 050 21808	1Ω8 1% 0.6W
3521	4822 050 11503	15k 1% 0.4W
3522	4822 051 10123	12k 2% 0.25W
3523	4822 051 10123	12k 2% 0.25W
3524	4822 051 10102	1k 2% 0.25W
3525	4822 051 10333	33k 2% 0.25W
3526	4822 051 10472	4k7 2% 0.25W
3527	4822 116 52271	33k 5% 0.5W
3528	4822 051 10103	10k 2% 0.25W
3534	4822 051 10682	6k8 2% 0.25W
3535	4822 051 10103	10k 2% 0.25W
3536	4822 051 10103	10k 2% 0.25W
3537	4822 051 10512	5k1 2% 0.25W
3539	4822 050 24703	47k 1% 0.6W
3541	4822 051 10562	5k6 2% 0.25W
3542	4822 051 10683	68k 2% 0.25W
3545	4822 050 22204	220k 1% 0.6W
3546	4822 050 26803	68k 1% 0.6W
3547	4822 050 26803	68k 1% 0.6W
3548	4822 050 22204	220k 1% 0.6W
3549	4822 051 10153	15k 2% 0.25W
3551	4822 050 22203	22k 1% 0.6W
3552	4822 050 21502	1k5 1% 0.6W
3553	4822 050 22202	2k2 1% 0.6W
3554	4822 053 12159	15Ω 5% 3W
3555	4822 050 21501	150Ω 1% 0.6W
3562	4822 051 10272	2k7 2% 0.25W
3563	4822 051 10223	22k 2% 0.25W
3564	4822 051 10123	12k 2% 0.25W
3601	4822 051 10271	270Ω 2% 0.25W
3602	4822 051 10223	22k 2% 0.25W
3603	4822 051 10103	10k 2% 0.25W
3604	4822 051 10223	22k 2% 0.25W
3605	4822 050 24702	4k7 1% 0.6W
3606	4822 051 10103	10k 2% 0.25W
3607	4822 051 10103	10k 2% 0.25W
3608	4822 050 21001	100Ω 1% 0.6W
3609	4822 051 20222	2k2 5% 0.1W
3610	4822 051 10473	47k 2% 0.25W
3611	4822 051 10103	10k 2% 0.25W
3612	4822 051 10125	1M2 5% 0.25W
3613 ▲	4822 052 11332	3k3 5% 0.5W NFR25
3614	4822 100 11319	4k7 Potmeter
3615	4822 051 10103	10k 2% 0.25W
3616	4822 051 10103	10k 2% 0.25W
3617	4822 100 11392	47k Potmeter
3618	4822 100 11392	47k Potmeter
3619	4822 051 20222	2k2 5% 0.1W
3620	4822 116 83982	0Ω33
3621	4822 051 10823	82k 2% 0.25W
3622	4822 051 10184	180k 2% 0.25W
3623	4822 051 10103	10k 2% 0.25W
3624	4822 051 10123	12k 2% 0.25W
3625	4822 051 10102	1k 2% 0.25W
3626 ▲	4822 052 10158	1Ω5 5% 0.33W NFR25
3627	4822 050 25602	5k6 1% 0.6W
3628	4822 050 22205	2M2 1% 0.6W

Main panel

3629	4822 051 10223	22k 2% 0.25W	
3630	4822 051 10223	22k 2% 0.25W	
3631	4822 116 80545	1k 5% 0.5W	
3632	4822 116 82974	100k 5% 0.5W	
3633	4822 050 23302	3k3 1% 0.6W	
3634	4822 050 25601	560Ω 1% 0.6W	
3635	4822 050 26802	6k8 1% 0.6W	
3636	4822 050 21001	100Ω 1% 0.6W	
3637	4822 051 10561	560Ω 2% 0.25W	
3638	4822 050 25601	560Ω 1% 0.6W	
3639▲	4822 052 10229	22Ω 5% 0.33W NFR25	
3640	4822 051 10223	22k 2% 0.25W	
3641	4822 051 10103	10k 2% 0.25W	
3642	4822 050 22202	2k2 1% 0.6W	
3643	4822 050 24709	47Ω 1% 0.6W	
3644	4822 051 10102	1k 2% 0.25W	
3645	4822 117 10294	1.5Ω 5% 3W	
3646	4822 116 83629	3k3 5% 3W	
3647	4822 051 10223	22k 2% 0.25W	
3648	4822 050 21201	120Ω 1% 0.6W	
3649	4822 051 10472	4k7 2% 0.25W	
3650	4822 051 10561	560Ω 2% 0.25W	
3651	4822 050 28203	82k 1% 0.6W	
3652	4822 050 24709	47Ω 1% 0.6W	
3653	4822 050 23301	330Ω 1% 0.6W	
3654	4822 100 20166	10k Potmeter	
3655	4822 050 23301	330Ω 1% 0.6W	
3656	4822 116 83966	12Ω 2W	
3657	4822 051 10103	10k 2% 0.25W	
3658	4822 051 10102	1k 2% 0.25W	
3659	4822 051 10223	22k 2% 0.25W	
3660	4822 051 20222	2k2 5% 0.1W	
3661	4822 051 10224	220k 2% 0.25W	
3662	4822 051 10123	12k 2% 0.25W	
3663	4822 051 10332	3k3 2% 0.25W	
3664	4822 051 10102	1k 2% 0.25W	
3665	4822 051 10102	1k 2% 0.25W	
3666	4822 051 10122	1k2 2% 0.25W	
3667▲	4822 052 10101	100Ω 5% 0.33W NFR25	
3668	4822 051 10561	560Ω 2% 0.25W	
3669	4822 116 80546	1M 5% 0.5W	
3670	4822 051 20222	2k2 5% 0.1W	
3671	4822 100 11213	22k Potmeter	
3672	4822 116 82984	150Ω 5% 3W	
3673	4822 116 52234	100k 5% 0.5W	
3674	4822 051 10223	22k 2% 0.25W	
3675	4822 116 52234	100k 5% 0.5W	
3676	4822 051 10223	22k 2% 0.25W	
3677	4822 050 12403	2.2M 0.125W	
3678	4822 116 30436	11k8 1%	
3679	4822 051 20222	2k2 5% 0.1W	
3680	4822 050 11503	15k 1% 0.4W	
3681	4822 050 21103	11k 1% 0.6W	
3682	4822 051 10272	2k7 2% 0.25W	
3683	4822 051 10103	10k 2% 0.25W	
3684	4822 050 11002	1k 1% 0.4W	
3685	4822 051 10475	4M7 5% 0.25W	
3686	4822 116 30437	12k7 1%	
3687	4822 050 22003	20k 1% 0.6W	
3688	4822 050 11002	1k 1% 0.4W	
3689	4822 051 20222	2k2 5% 0.1W	
3690	4822 050 11503	15k 1% 0.4W	
3691	4822 116 82455	7k5 0.25W	
3692	4822 051 10473	47k 2% 0.25W	
3693	4822 050 21203	12k 1% 0.6W	
3694	4822 050 21001	100Ω 1% 0.6W	
3695	4822 051 10102	1k 2% 0.25W	
3696	4822 051 10104	100k 2% 0.25W	
3697	4822 051 10103	10k 2% 0.25W	
3698	4822 051 10332	3k3 2% 0.25W	

3699	4822 100 20166	10k Potmeter

5101	4822 157 10292	14mH line filter
5104	4822 146 31224	Power transformer
5108	4822 157 52234	100µH
5121	4822 157 70483	Bead coil
5122	4822 157 70483	Bead coil
5123	4822 157 70483	Bead coil
5124	4822 157 70483	Bead coil
5151	4822 156 21399	180µH
5153	4822 157 52234	100µH
5155	4822 157 70076	30µH
5173	4822 157 52494	6.8µH
5174	4822 157 52494	6.8µH
5175	4822 157 52494	6.8µH
5401	4822 157 63211	33µH
5602	4822 142 40327	Driver transformer
5603	4822 142 40327	Driver transformer
5604	4822 142 40326	1.4mH
5606	4822 140 10433	Line output transformer
5607	4822 157 70483	Bead coil
5608	4822 242 71344	2µH
5609	4822 157 70483	Bead coil
5611	4822 156 50103	Transformer
5612	4822 148 81317	H Centering trafo
5613	4822 157 63218	10mH
5615	4822 158 10887	Bead coil

6101	4822 130 80572	RGP30J
6102	4822 130 80572	RGP30J
6103	4822 130 80572	RGP30J
6104	4822 130 80572	RGP30J
6105	4822 130 31393	RGP10J
6106	4822 130 31393	RGP10J
6107	4822 130 31393	RGP10J
6108	5322 130 31971	RGP15D
6109	4822 130 30621	1N4148
6110	4822 130 34167	BZX79-C6V2
6111	4822 130 31607	RGP10D
6112	5322 130 31971	RGP15D
6150	5322 130 31969	RGP15M
6151	5322 130 33885	RGP15J
6152	4822 130 41486	BYV95B
6153	4822 130 41486	BYV95B
6154	5322 130 31971	RGP15D
6155	4822 130 31024	BZX79-C18
6156	4822 130 41486	BYV95B
6158	4822 130 80446	BAS32L
6159	4822 130 30621	1N4148
6160	4822 130 30621	1N4148
6161	4822 130 41486	BYV95B
6201	4822 130 30621	1N4148
6202	4822 130 30621	1N4148
6203	4822 130 30621	1N4148
6402	4822 130 30621	1N4148
6403	4822 130 80446	BAS32L
6404	4822 130 34233	BZX79-C5V1
6405	4822 130 34382	BZX79-C8V2
6406	4822 130 80446	BAS32L
6407	4822 130 80446	BAS32L
6408	4822 130 80655	BZX79-F2V4
6409	4822 130 31024	BZX79-B18
6412	4822 130 42489	RGP10G
6413	4822 130 31878	1N4003
6414	4822 130 30621	1N4148
6415	4822 130 80446	BAS32L
6416	4822 130 30621	1N4148
6417	4822 130 80446	BAS32L

6418	4822 130 80446	BAS32L
6419	4822 130 30621	1N4148
6501	4822 130 31607	RGP10D
6502	4822 130 31024	BZX79-C18
6503	4822 130 31024	BZX79-C18
6504	4822 130 80446	BAS32L
6505	4822 130 80655	BZX79-F2V4
6507	4822 130 41486	BYV95B
6512	4822 130 34278	BZX79-C6V8
6514	4822 130 41486	BYV95B
6515	4822 130 83239	MUR460
6516	4822 130 83239	MUR460
6601	4822 130 80446	BAS32L
6602	4822 130 80446	BAS32L
6603	4822 130 80446	BAS32L
6604	4822 130 80446	BAS32L
6605	4822 130 80446	BAS32L
6607	4822 130 83128	EGP30G
6608	4822 130 42489	RGP10G
6611	4822 130 80446	BAS32L
6612	4822 130 34197	BZX79-C12
6613	4822 130 34197	BZX79-C12
6614	4822 130 31607	RGP10D
6618	4822 130 42489	RGP10G
6621	4822 130 42489	RGP10G
6622	4822 130 42489	RGP10G
6623	4822 130 42489	RGP10G
6624	5322 130 32042	BYW96E
6625	4822 130 82584	MUR10150E
6626	4822 130 30621	1N4148
6627	4822 130 80446	BAS32L
6628	4822 130 80446	BAS32L
6631	4822 130 34685	BZX79-C75
6632	4822 130 34685	BZX79-C75
6633	4822 130 80446	BAS32L
6634	4822 130 30621	1N4148
6635	4822 130 80446	BAS32L
6636	4822 130 80446	BAS32L
6637	4822 130 80446	BAS32L
6638	4822 130 80446	BAS32L

7101	5322 130 42047	BUW13A
7102	4822 130 40995	BD434
7103	4822 130 44503	BC547C
7104	4822 130 44104	BC328
7105▲	4822 130 80908	CNX62A
7151	4822 209 81397	TL431CLP
7152	4822 130 44104	BC328
7153	5322 130 24081	BT151-500R
7154	4822 209 81726	MC7812CT
7201	4822 209 31668	TDA7053
7401	5322 130 42136	BC848C
7402	5322 130 42136	BC848C
7403	4822 209 10866	HEF4528BP
7404	5322 130 42136	BC848C
7405	5322 130 42136	BC848C
7406	4822 209 63299	TDA2595/V9
7407	4822 130 44196	BC548C
7408	5322 130 60068	BC558C
7409	5322 130 44336	BSV52
7410	5322 130 42136	BC848C
7412	5322 130 42136	BC848C
7413	4822 209 31669	TDA4850
7417	5322 130 42136	BC848C
7418	5322 130 42136	BC848C
7421	5322 130 42136	BC848C
7422	5322 130 42136	BC848C
7491	5322 130 42136	BC848C
7501	4822 209 32382	TDA4861
7502	5322 130 42136	BC848C
7503	4822 130 41646	BF423

Spare parts lists

Main panel

7504	5322 130 42136	BC848C
7505	5322 130 42136	BC848C
7508	4822 130 41782	BF422
7509	4822 130 41782	BF422
7511	4822 130 44196	BC548C
7512	4822 130 44104	BC328
7602	4822 130 41782	BF422
7603	4822 130 42513	BC858C
7604	5322 209 86234	NE5532N
7605	4822 209 80797	LM393N
7606	5322 130 60068	BC558C
7607	4822 130 44196	BC548C
7608	5322 130 62262	IRF730
7612	4822 130 42513	BC858C
7613	5322 130 60068	BC558C
7614	4822 130 44196	BC548C
7615	5322 130 44336	BSV52
7616	5322 130 60068	BC558C
7617	4822 130 42679	BUT11AF/1
7618	5322 130 63002	IRF640(SGS)
7619	4822 209 80587	LM324N
7621	5322 130 63002	IRF640(SGS)
7622	5322 130 42136	BC848C
7623	4822 209 80797	LM393N
7624	5322 130 62262	IRF730
7625	4822 130 44503	BC547C
7626	4822 130 63274	2SC2344E
7627	4822 130 63275	2SA1011E
7628	4822 130 60832	BF857
7629	4822 130 62701	LJH16212
7631	5322 130 42136	BC848C
7632	4822 130 41782	BF422
7633	5322 130 42136	BC848C
7634	4822 130 41782	BF422
7635	5322 130 42136	BC848C
7636	5322 130 42136	BC848C
7637	5322 130 42136	BC848C
7638	5322 130 60068	BC558C
7639	4822 130 44196	BC548C
7641	5322 130 44336	BSV52

Video panel

Various

1103	4822 212 30614	Video panel complete
	4822 265 20366	1P Connector M307
	4822 265 30893	4P Connector M304
	4822 265 10274	Mini pin socket
	4822 255 70245	CRT socket
	5322 390 20011	Silicon grease

2301	4822 124 22686	10µF 16V
2302	4822 124 80276	10µF 20% 25V
2303	4822 122 33496	100nF 10% 63V
2304	4822 124 80276	10µF 20% 25V
2306	4822 124 80276	10µF 20% 25V
2308	4822 124 22686	10µF 16V
2311	4822 122 33496	100nF 10% 63V
2312	4822 122 33496	100nF 10% 63V
2313	4822 122 33496	100nF 10% 63V
2314	4822 122 33496	100nF 10% 63V
2315	4822 122 33496	100nF 10% 63V
2316	4822 122 33496	100nF 10% 63V
2317	4822 122 33496	100nF 10% 63V
2318	4822 122 33496	100nF 10% 63V
2321	4822 122 33496	100nF 10% 63V
2323	4822 122 33496	100nF 10% 63V
2324	4822 122 33496	100nF 10% 63V
2325	4822 122 31766	120pF 2% 63V
2326	4822 122 31765	100pF 2% 63V
2327	4822 122 31766	120pF 2% 63V
2328	4822 122 32442	10nF 50V
2331	4822 122 32442	10nF 50V
2332	4822 122 32442	10nF 50V
2333	4822 124 80277	4.7µF 100V
2334	4822 121 70096	1µF 160V
2335	4822 121 70096	1µF 160V
2336	4822 124 80277	4.7µF 100V
2337	4822 124 80277	4.7µF 100V
2338	4822 121 70096	1µF 160V
2339	4822 122 31774	56pF 2% 63V
2341	4822 124 42155	4.7µF 250V
2342	4822 122 33967	680pF 5% 500V
2343	4822 126 12651	10nF 20% 2kV
2344	4822 122 32442	10nF 50V
2345	5322 122 31842	330pF 5%
2346	5322 122 31842	330pF 5%
2347	5322 122 31842	330pF 5%
2353	4822 122 32442	10nF 50V
2354	4822 124 22678	100µF 20% 16V
2355	4822 122 33496	100nF 10% 63V
2356	4822 122 33968	1nF 5% 500V
2357	4822 122 33968	1nF 5% 500V
2358	4822 122 33496	100nF 10% 63V
2360	4822 122 31971	10pF 2% 63V
2361	4822 122 33496	100nF 10% 63V
2362	4822 122 33968	1nF 5% 500V
2363	4822 122 33968	1nF 5% 500V
2364	4822 122 33968	1nF 5% 500V
2365	4822 122 33496	100nF 10% 63V
2371	4822 252 60127	SPARK GAP
2372	4822 252 60127	SPARK GAP
2373	4822 252 60127	SPARK GAP
2374	4822 122 33496	100nF 10% 63V
2375	4822 122 33496	100nF 10% 63V
2376	4822 122 32442	10nF 50V
2377	4822 122 31773	560pF 2% 63V
2378	4822 122 31797	22nF 10% 63V

3301	4822 051 10759	75Ω 2% 0.25W
3302	4822 051 10759	75Ω 2% 0.25W
3303	4822 051 10759	75Ω 2% 0.25W
3304	4822 051 10103	10k 2% 0.25W
3305	4822 051 10103	10k 2% 0.25W
3306	4822 051 10103	10k 2% 0.25W
3307	4822 051 10471	470Ω 2% 0.25W
3308	4822 111 90368	680k 2% 0.125W
3309	4822 051 10229	22Ω 2% 0.25W
3310	4822 051 10471	470Ω 2% 0.25W
3311	4822 051 51201	120Ω 1% 0.125W
3312	4822 051 51201	120Ω 1% 0.125W
3313	4822 051 51201	120Ω 1% 0.125W
3314	4822 051 10229	22Ω 2% 0.25W
3315	4822 051 10102	1k 2% 0.25W
3316	4822 100 11319	4k7 Potmeter
3317	4822 051 10102	1k 2% 0.25W
3318	4822 051 20222	2k2 5% 0.1W
3319	4822 051 20222	2k2 5% 0.1W
3320	4822 051 10272	2k7 2% 0.25W
3321	4822 051 20222	2k2 5% 0.1W
3322	4822 051 10102	1k 2% 0.25W
3323	4822 051 10681	680Ω 2% 0.25W
3324	4822 053 12391	390Ω 5% 3W
3325	4822 053 12331	330Ω 5% 3W
3326	4822 050 21009	10Ω 1% 0.6W
3327	4822 050 21009	10Ω 1% 0.6W
3328	4822 051 10109	10Ω 2% 0.25W
3329	4822 050 11002	1k 1% 0.4W
3330	4822 051 10473	47k 2% 0.25W
3331	4822 051 10103	10k 2% 0.25W
3332	4822 051 10103	10k 2% 0.25W
3333	4822 051 10103	10k 2% 0.25W
3334	4822 100 11597	100Ω Potmeter
3335	4822 100 11597	100Ω Potmeter
3336	4822 100 11597	100Ω Potmeter
3337	4822 051 10682	6k8 2% 0.25W
3338	4822 051 20222	2k2 5% 0.1W
3339	4822 051 10271	270Ω 2% 0.25W
3340	4822 050 21201	120Ω 1% 0.6W
3341	4822 051 10391	390Ω 2% 0.25W
3342	4822 051 10391	390Ω 2% 0.25W
3343	4822 051 10391	390Ω 2% 0.25W
3344	4822 051 20222	2k2 5% 0.1W
3345	4822 051 10103	10k 2% 0.25W
3346	4822 051 10182	1k8 2% 0.25W
3347	4822 050 22201	220Ω 1% 0.6W
3348	4822 050 22001	200Ω 1% 0.6W
3349	4822 050 22201	220Ω 1% 0.6W
3350	4822 050 21201	120Ω 1% 0.6W
3351	4822 050 21201	120Ω 1% 0.6W
3352	4822 050 21201	120Ω 1% 0.6W
3353	4822 050 21201	120Ω 1% 0.6W
3354	4822 051 10569	56Ω 2% 0.25W
3355	4822 051 10479	47Ω 2% 0.25W
3356	4822 051 10479	47Ω 2% 0.25W
3357	4822 050 24709	47Ω 1% 0.6W
3358	4822 051 10479	47Ω 2% 0.25W
3359	4822 051 20222	2k2 5% 0.1W
3360	4822 050 21201	120Ω 1% 0.6W
3361	4822 050 25609	56Ω 1% 0.6W
3362	4822 050 25609	56Ω 1% 0.6W
3363	4822 050 25609	56Ω 1% 0.6W
3364	4822 051 10479	47Ω 2% 0.25W
3365	4822 051 10221	220Ω 2% 0.25W
3366	4822 053 12391	390Ω 5% 3W
3367	4822 051 10221	220Ω 2% 0.25W
3368	4822 053 12331	330Ω 5% 3W
3369	4822 051 10221	220Ω 2% 0.25W
3370	4822 051 10102	1k 2% 0.25W
3371	4822 053 12391	390Ω 5% 3W
3372	4822 053 12331	330Ω 5% 3W
3373	4822 050 12403	2.2M 0.125W
3374	4822 116 52234	100k 5% 0.5W

Spare parts lists

Video panel

3375	4822 051 10184	180k 2% 0.25W
3376	5322 100 11539	100k Potmeter
3377	4822 051 10184	180k 2% 0.25W
3378	4822 050 12403	2.2M 0.125W
3379	4822 051 20222	2k2 5% 0.1W
3380	4822 051 20222	2k2 5% 0.1W
3381	4822 116 52234	100k 5% 0.5W
3382	4822 051 10184	180k 2% 0.25W
3383	5322 100 11539	100k Potmeter
3384	4822 051 10184	180k 2% 0.25W
3385	4822 050 12403	2.2M 0.125W
3386	4822 116 52234	100k 5% 0.5W
3387	4822 051 10184	180k 2% 0.25W
3388	5322 100 11539	100k Potmeter
3389	4822 051 10272	2k7 2% 0.25W
3390	4822 051 10272	2k7 2% 0.25W
3391	4822 051 10184	180k 2% 0.25W
3392	4822 051 10272	2k7 2% 0.25W
3393	4822 116 83988	36Ω
3394	5322 116 51882	0Ω
3397	4822 116 80547	1k5 5% 0.5W
3399	4822 116 80548	15k 5% 0.5W
3710	4822 050 24702	4k7 1% 0.6W
3711	4822 051 10332	3k3 2% 0.25W
3712	4822 051 10472	4k7 2% 0.25W
3713	4822 051 10103	10k 2% 0.25W
3714	4822 051 20222	2k2 5% 0.1W
3715	4822 051 10102	1k 2% 0.25W
3716	4822 051 10473	47k 2% 0.25W
3717	4822 051 10332	3k3 2% 0.25W
3718	4822 051 10474	470k 2% 0.25W
3719	4822 051 10102	1k 2% 0.25W
3720	4822 051 10361	360Ω 2% 0.25W
3801	5322 116 51882	0Ω
3802	5322 116 51882	0Ω
3803	5322 116 51882	0Ω
3804	5322 116 51882	0Ω
3805	5322 116 51882	0Ω
3806	5322 116 51882	0Ω
3807	4822 051 10008	0Ω
3808	5322 116 51882	0Ω
3809	5322 116 51882	0Ω
3810	5322 116 51882	0Ω
3811	4822 051 10008	0Ω
3823	5322 116 51882	0Ω
3824	5322 116 51882	0Ω

5301	4822 158 30254	T-COIL
5302	4822 158 30254	T-COIL
5303	4822 158 30254	T-COIL
5304	4822 157 53189	5µH
5305	4822 157 52493	3.3µH
5306	4822 157 52493	3.3µH
5307	4822 157 52493	3.3µH
5310	4822 157 52493	3.3µH

6302	4822 130 80446	BAS32L
6303	4822 130 80446	BAS32L
6304	4822 130 80446	BAS32L
6305	4822 130 80446	BAS32L
6306	4822 130 80446	BAS32L
6307	4822 130 34382	BZX79-C8V2
6308	4822 130 80446	BAS32L
6309	4822 130 30621	1N4148
6310	4822 130 80446	BAS32L
6311	4822 130 80877	BAV103
6312	4822 130 80877	BAV103
6313	4822 130 80877	BAV103
6314	4822 130 80877	BAV103
6315	4822 130 80877	BAV103
6316	4822 130 80877	BAV103
6317	5322 130 31969	RGP15G
6318	5322 130 31969	RGP15G
6319	4822 130 80446	BAS32L
6320	4822 130 34233	BZX79-C5V1
6321	4822 130 42489	RGP10G
6322	4822 130 80446	BAS32L
6323	4822 130 80446	BAS32L

7301	4822 209 62364	LM1203
7302	4822 130 62278	2SC3950E
7303	4822 130 62279	2SC3953E
7304	4822 130 62278	2SC3950E
7305	4822 130 62279	2SC3953E
7306	4822 130 62278	2SC3950E
7307	4822 130 62279	2SC3953E
7308	5322 130 42136	BC848C
7309	5322 130 42136	BC848C
7310	4822 130 60383	BF824
7311	5322 130 44336	BSV52
7312	4822 130 41646	BF423
7313	4822 130 41646	BF423
7314	4822 130 41646	BF423
7315	5322 130 44336	BSV52
7316	5322 130 44336	BSV52
7317	5322 130 44336	BSV52
7318	5322 209 11473	PC74HCT86P
7319	5322 130 42136	BC848C
7320	5322 130 44336	BSV52
7321	5322 130 44336	BSV52
7322	5322 130 44336	BSV52

Headphone panel

	4822 267 31526	Headphone jack

LED panel

6629	4822 130 82021	LED LTL307GE

Control panel

1110	4822 212 30613	Control panel complete
1113	4822 276 13249	Degaussing switch

2201	4822 122 33496	100nF 10% 63V
2202	4822 122 33496	100nF 10% 63V

3200	4822 102 10465	2X20k
3201	4822 050 22203	22k 1% 0.6W
3202	4822 050 22203	22k 1% 0.6W
3203	4822 051 10273	27k 2% 0.25W
3204	4822 051 10273	27k 2% 0.25W
3420	4822 050 22202	2k2 1% 0.6W
3428	4822 050 21003	10k 1% 0.6W
3432	4822 100 20817	10k Potmeter
3439	4822 050 16802	6k8 1% 0.4W
3440	4822 100 20817	10k Potmeter
3448	4822 050 16802	6k8 1% 0.4W
3458	4822 100 20817	10k Potmeter
3461	4822 050 21502	1k5 1% 0.6W
3462	4822 051 10272	2k7 2% 0.25W
3571	4822 100 20817	10k Potmeter
3572	4822 050 24702	4k7 1% 0.6W
3573	4822 050 12702	2k7 1% 0.4W
3574	4822 100 20817	10k Potmeter
3575	4822 050 16802	6k8 1% 0.4W
3576	4822 050 27502	7k5 1% 0.6W
3577	4822 100 20821	10k Potmeter
3578	4822 116 52271	33k 5% 0.5W
3579	4822 050 27503	75k 1% 0.6W
3581	4822 051 10153	15k 2% 0.25W